

Reviewed: 2 New Macs • Illustrator 6 • FileMaker 3

Special Report
Apple's New Chief, Page 38

APRIL 1996

MacUser

Get On the Web

FREE
WEB
POCKET
GUIDE
INSIDE

THE MACINTOSH® AUTHORITY
\$3.95 International

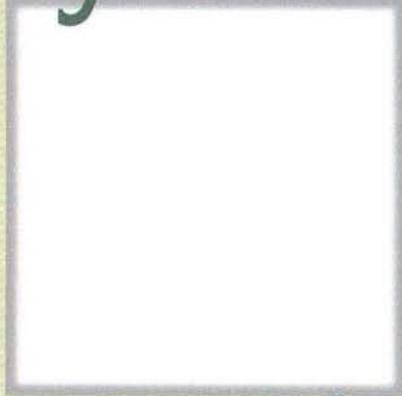
Our Experts Show You
How to Manage Your
Web Site

PLUS

Top Productivity
Boosters, Page 102

Color Ink-Jets
Compared, Page 133



in
here
you

work
miracles

T
A
K
E

In here
You

Your Power Mac™

C
O
N
T
R
O
L

And
Microsoft® Office

Become one.

Y
O
U
A
R
E

You assemble your thoughts
Effortlessly.

A
N

Words tables

I
D
E
A

Charts graphics
From one program

F
A
C
T
O
R
Y

And drop them
Into another
Instantly.

I
D
E
A

You run
Microsoft Excel calculations
In your Word document.

B
E
G
I
N

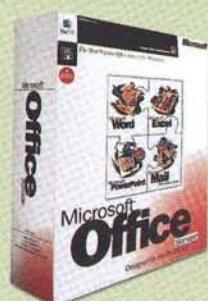
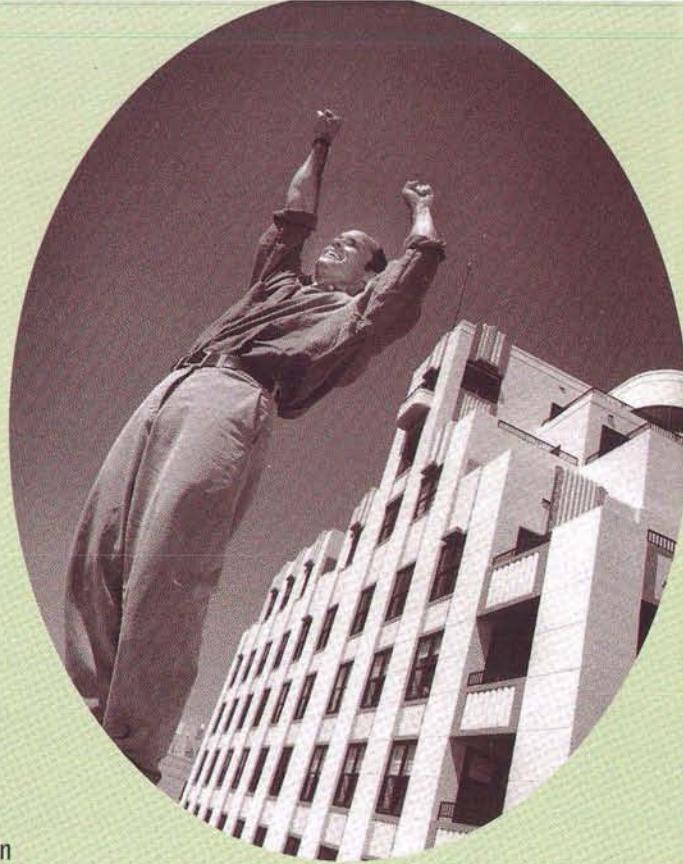
You turn
Your Word document
Into a PowerPoint®
Presentation.

T
O
F
O
R
M

You see everything
Come together.
Seamlessly.

G
O
A
H
E
A

Make something.
Make anything.
This is you. Working.



Microsoft

WHERE DO YOU WANT TO GO TODAY?™

Editor's Rave!

"Considering the purchase of a PowerMac?...We strongly recommend that you take a serious look at what Power Computing has to offer."

MacUser - Aug 95

"They might as well have come from Apple - the performance and compatibility are that good."

Macworld - Aug 95

"...an excellent Mac alternative, whether or not you are pinching your pennies."

PC Magazine - Aug 95

"Power Computing's systems match their PowerMac counterparts for speed and compatibility and are every bit as good as a dyed-in-the-wool Macintosh."

InfoWorld - June 95



PowerCurve 601/120 Starter 120MHz PowerPC™ 601+

8MB RAM (256MB Max RAM)
Optional Level 2 Cache (1MB Max)
850MB 11ms SCSI Hard Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
Built-in Graphics w/1MB VRAM
upgradeable to 4MB VRAM
Extended Keyboard & Mouse



\$1899

PowerCurve 601/120 Hot Pick 120MHz PowerPC™ 601+

8MB RAM (256MB Max RAM)
Optional Level 2 Cache (1MB Max)
850MB 11ms SCSI Hard Drive
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
Built-in Graphics w/1MB VRAM
upgradeable to 4MB VRAM
14 inch .28 DP Monitor
Extended Keyboard & Mouse

\$2499

PowerWave 604/120 Starter 120MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
Optional 256K, 512K, or 1MB Cache
1.0GB 11ms SCSI Hard Drive
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Desktop Computer Case
Extended Keyboard & Mouse

\$3199

PowerWave 604/132 Hot Pick 132 MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
256K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Extended Keyboard & Mouse

\$3699

"With an experienced staff recruited from Dell, APS, and Apple, Power Computing has designed a robust support system...
The support is excellent."

Macworld - Aug 95

PowerWave 604/132 MultiMedia 132 MHz PowerPC™ 604

24MB RAM (512MB Max RAM)
256K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Tower Configuration
Extended Keyboard & Mouse

\$4299

PowerWave 604/150 Hot Pick 150 MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
512K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Tower Configuration
Extended Keyboard & Mouse

\$4799

Check out Power's awesome website and register to win a PowerWave 604 MacOS system. <http://www.powercc.com>

2555 N. Interstate 35, Round Rock TX 78664-2015
tel. 512/388-6868 fax.512/388-6799
Internet: info@powercc.com



Register to win
a PowerWave!
<http://www.powercc.com>

Power Computing Introduces **POWERWAVE** Blow Your Mind, Not Your Budget

PowerWave 604/120 Home Office 120MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
Optional 256K, 512K, or 1MB Cache
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
Internal Iomega Zip™ Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Extended Keyboard & Mouse

\$3599

OVER \$1200 OF FREE SOFTWARE *BUNDLED WITH EVERY SYSTEM

Mac OS 7.5.2
Insignia's Soft Windows 2.0 60 day trial,
Grolier's Multimedia Encyclopedia,
Now Utilities, Now Up-to-Date, Now
Contact, Intuit's Quicken, FWB HardDisk
Toolkit PE, CD-ROM Toolkit, ClarisWorks,
America Online, 250 Bitstream Fonts,
Launch CD, US CD Atlas, World CD Atlas,
The Animals CD-ROM, Nisus Writer

FREE

PowerWave 604/150 XL 150MHz PowerPC™ 604

32MB RAM (512MB Max RAM)
512K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
15 inch Sony Monitor
Quad-Speed (4X) CD-ROM Drive
Internal Iomega Zip™ Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/4MB VRAM
Extended Keyboard & Mouse

\$5899

Service & Support

30 day money back,
Love-Me-Or-I'm-History guarantee.
Toll-free lifetime technical support.
1, 2, or 3-year on-site service
available, starting at \$49.

Go Configure!

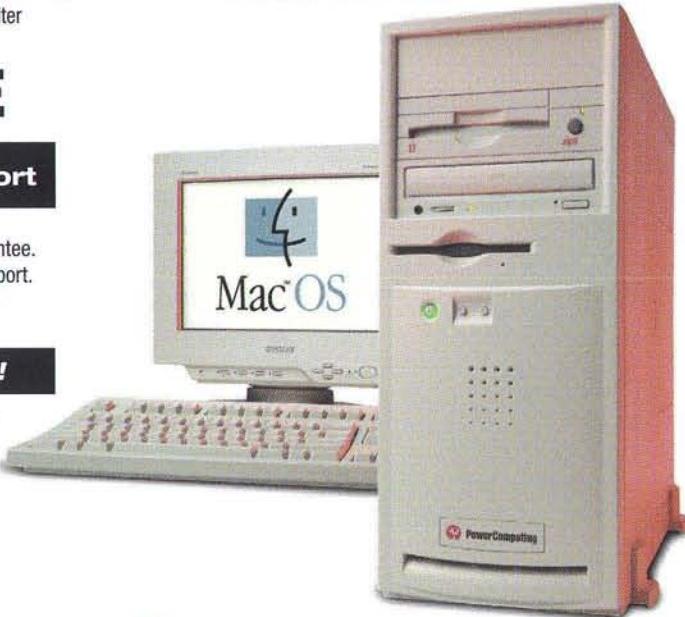
Since Power Computing is the
manufacturer, you can
customize your RAM,
hard drive, video and
monitor options – just call.

Chosen by Apple® to be the first Mac™OS licensee, we've made
Power Computing Apple to the core. Designed and built by
brilliant, trend-setting Mac engineers to feel like an Apple, run like
an Apple, and love people like an Apple, Power Computing has
taken something great, and made it even better.



"A machine we love even
more than the PowerMac 7500 -
the PowerWave 604"

MW ★★★★ Macworld - Feb 96



**ORDER DIRECT AND SAVE
1-800-410-7693**

Circle 161 on reader service card



PowerComputing
MORE POWER TO YOU.™

Macworld

THE MACINTOSH® AUTHORITY APRIL 1996

Features

Internet Essentials

86 Get On the Web



BY MEL BECKMAN You don't have to be a Unix-head to build your own Internet server. Macworld Lab compares solutions for a Mac-based server and proves the Mac is definitely a contender when it comes to the Web.

Internet Essentials

94 Stay On the Web

BY MATTHEW HAWN From small office to big business, everyone's getting on the Net—what about you? Practical advice on how to integrate the Internet with your business, plus a list of ten essentials to keep your site active and profitable.



GIF giving, in
NetSmart, page 121.

102 The Right Tools for the Job

BY ROBERT C. ECKHARDT Sometimes it's not what Mac you have, but what you have in it. We comb through scores of utilities to come up with a winning combination of productivity tools.

News

News Flash

38 Shakeup at Apple

Spindler makes way for a new CEO.

40 Coming Attractions

Exciting Copland features and interface refinements previewed at Expo sneak peek.

41 Internet Watch

Server security • Try out the latest browsers, and more.

Special Report

46 Which Port Will It Be?

Firewire, GeoPort, or USB.

Macworld Exclusive

48 Quark's Dilemma

Product and personnel problems nag the page-layout giant.

Adobe Illustrator 6.0:
what's new, what's not—
reviewed, page 54.



OCR miniscanner,
reviewed, page 75.

Opinion

Letters

27 State of the Mac

BY ADRIAN MELLO Apple: Survival guide for a new era.

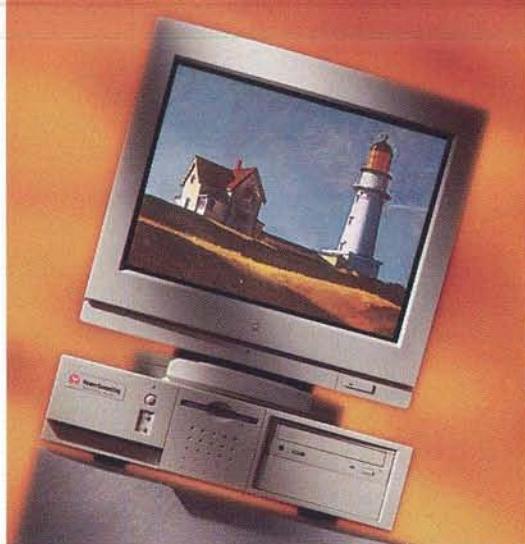
33 The Desktop Critic

BY DAVID POGUE Eight ways to make a million.

252 Viewpoint

BY STEVEN LEVY A visit from our favorite iconoclast.





The PowerCurve
601/120—Macworld
Lab-tested and
reviewed, page 57.

Secrets

111 Comedy of Errors

BY JOSEPH SCHORR Plain-English translations of the Mac's error messages.

115 Quick Tips

BY LON POOLE Tips, tricks, and shortcuts.

121 NetSmart

BY CAMERON CROTTY The hows and whys of encoding electronic files.

Media

125 Sounding Good

BY JIM HEID Tips on how to get the best multimedia sound.

128 Publishing Workshop

BY DAVID BLATNER Clip a little here, crop a little there.

130 Graphics Workshop

BY CATHY ABES Get the most out of customized brushes.

ON THE COVER

Photograph by Kevin Candler; screen image by FPG

133 MW LAB

Affordable Color Printers

BY PETER M. STOLLER The proof is in the printing—Macworld Lab tests six ink-jet printers designed for small offices, with surprising results.

155

Consumer Advocate

BY HOWARD BALDWIN How to choose the right Mac for you.

159

Star Ratings

Macworld's ratings for hundreds of hardware and software products at a glance.



Down the CD-ROM road with DVD, page 45.

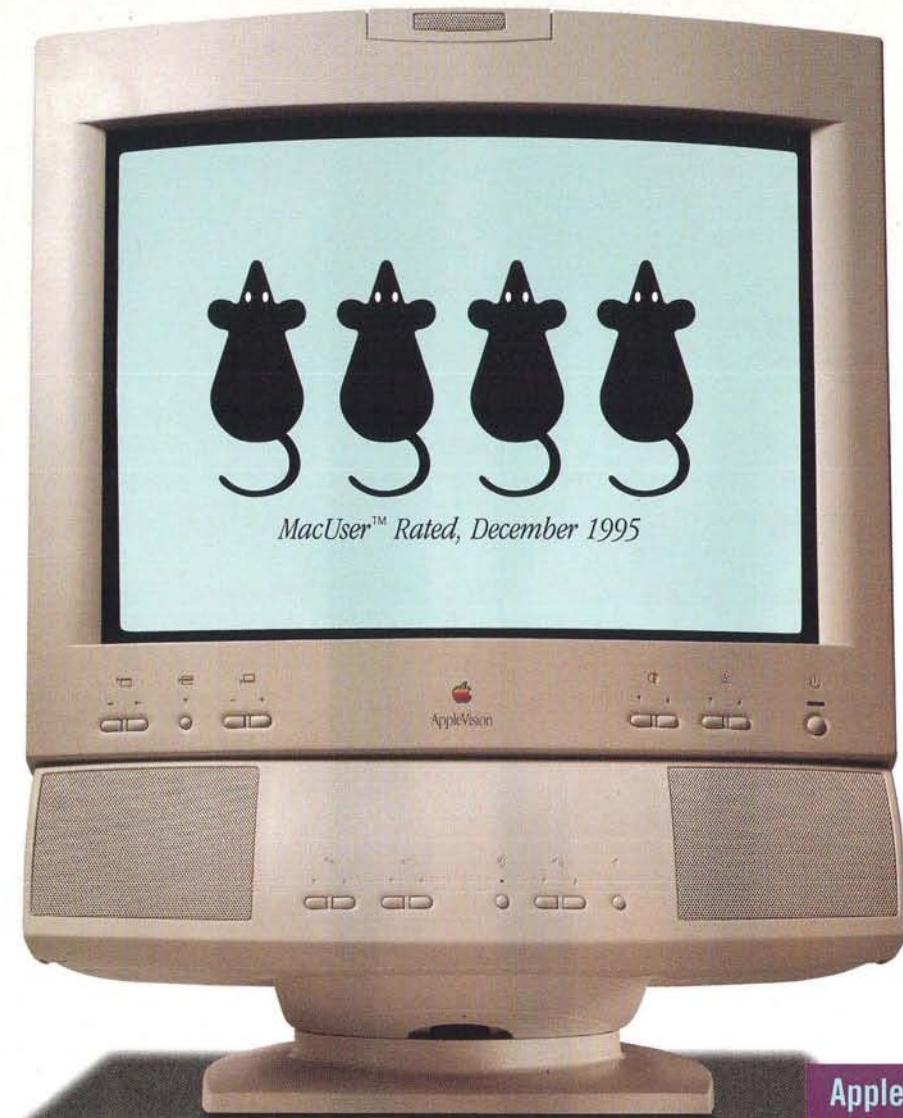


April 1996, Volume 13, Number 4 Macworld (ISSN 0741-9647) is published monthly by Macworld Communications, Inc. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to 800/288-6848 or 303/604-1465. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for postage for Canada and Mexico subscribers. Add \$69 per year for postage to all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices. Postmaster: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80323-4529. Printed in the U.S.A.

Reviews

- 54 **★★★★/7.1** Adobe Illustrator 6.0 Illustration program
- 56 **★★★★/8.2** FileMaker Pro 3.0 Relational database
- 57 **★★★★/7.5** PowerCurve 601/120 Desktop system
- 58 **★★★★/5.9** PowerBook Duo 2300c Subnotebook
- 59 **★★★★/6.3** Adobe PhotoDeluxe Image-editing package
- 60 **★★★★/5.0** QuickDraw 3D Accelerator Card; **★/1.9** Yarc Screamer Accelerator cards
- 61 **★★★★/8.9** Retrospect 3.0; Retrospect Remote 3.0 Backup utility
- 62 **★★★★/6.3** QuickStream/3; **★★★★/8.2** TribeLink2 Remote-access servers
- 63 **★★★★/8.0** CommuniGate Client/server messaging software
- 64 **★★/3.7** Biz Card Manager; **★★/3.7** Biz Card Reader; **★★/3.8** VIP Scan Business card scanners
- 66 **★★★★/7.1** Kiplinger TaxCut; **★★★★/8.6** MacInTax Deluxe; **★★★★/5.2** Personal Tax Edge Tax software
- 67 **★★/4.0** ProView 1.1; **★★/3.5** Mediagnügen 1.0.1 Multimedia authoring software
- 69 **★★★★/8.9** KPT Final Effects 3.0 After Effects plug-ins
- 69 **★★★★/6.5** Movie Cleaner Pro 1.1.1 QuickTime-compression utility
- 70 **★★★★/7.5** Hitachi StudioPad Graphics tablet
- 70 **★★★★/5.0** MailKeeper 1.0.2 Online information database
- 72 **★★★★/8.5** Descent 1.0 Adventure game
- 72 **★★★★/7.4** Spreadware Statistics Menu 4 Statistics software
- 75 **★★★★/6.9** Mac IRISPen Pen OCR scanner
- 75 **★★/4.9** STIP Professional 2.1 Multimedia authoring tool
- 77 **★★★★/5.9** Sony PC Cam Desktop video camera
- 77 **★★/3.0** Indexicon 1.0 Indexing program for Word 6
- 78 **★★★★/8.6** The Cartoon Guide to Physics Educational CD-ROM
- 80 **★★★★/8.8** In the 1st Degree Interactive adventure game
- 82 **★★/4.4** MapLinx 3.0 Mapping software
- 84 **★★★★/6.5** theFONDler 4.0.1 Font utility

When it comes to rating multimedia monitors,



AppleVision® 1710AV

\$1159*

MacUser magazine recently put some of the leading multimedia monitors through their paces. They performed lab tests on image and sound quality. They stared at test documents, line art and scanned images. They played their favorite CD's at various levels. They fiddled with knobs and on-screen

controls. And they researched street prices and warranties.

After all the results were in, the ViewSonic 17GA 17" (16.0" viewable) PerfectSound™ multimedia monitor was singled out as the "Best Buy."

No wonder. An entirely new technology creates the ultimate screen image — maximum

resolution of 1,280 x 1,024, refresh rates as high as 160Hz, and razor sharp screen definition.

And listen to this. High fidelity speakers are integrated into the monitor bezel so the full, rich stereo sound envelopes you. To quote a satisfied customer, "It rocks, man!"

And the 17GA is so attractively priced, it's like getting the multimedia feature for free. Several competitive models cost as much but are not even multimedia monitors. Rather than toot our own horn, perhaps we should refer you to MacUser magazine:



mice are nice but checks are better.



ViewSonic® 17GA

\$850*

"A real multimedia bargain," they said, "the ViewSonic 17GA offers solid image quality, warm colors, fine-sounding audio and a slew of easy-to-use on-screen controls." So when you're ready to buy, remember this: Many 17" (various viewable) multimedia monitors come

+ / OUTSTANDING		* / ACCEPTABLE			- / POOR	
RATING	PRODUCT	PRICE	SUPPORT	IMAGE QUALITY	SOUND QUALITY	
★★★★	ViewSonic 17GA	•	•	+	•	
★★★★½	Apple Apple Vision	-	•	+	+	
★★★★½	1710AV	-	•	+	+	
★★★★½	IBM 17S/S	-	•	•	+	
★★★★½	Nokia 447W	•	•	+	-	
★★★★½	Panasonic	-	-	-	-	
★★★★½	Pana Media 17	•	+	•	•	
★★★★½	Philips 17B	•	•	•	-	
★★★★½	Philips Brilliance 15A	•	•	•	-	

Reprinted from "MACUSER," December 1995. Copyright © 1995 Ziff-Davis Publishing Company.

* Estimated street price per "MACUSER" magazine, December 1995.

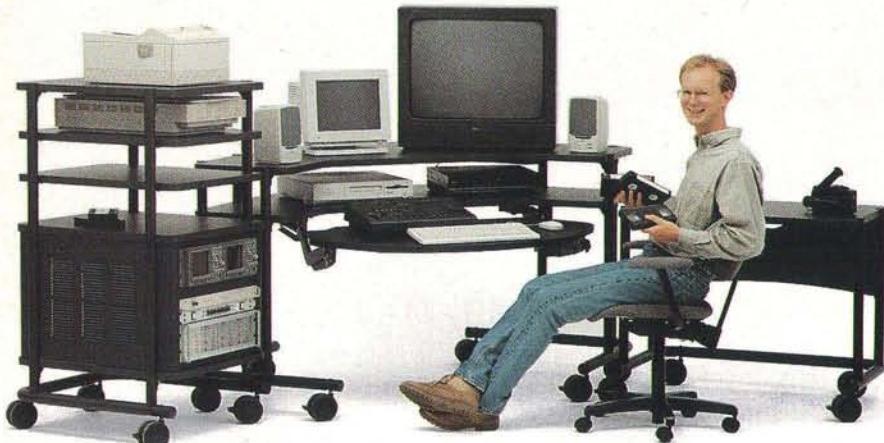
with mice, but only the ViewSonic 17GA has been selected as MacUser magazine's "Best Buy."



ViewSonic®

Circle 59 on reader service card

AnthroCarts®!



AnthroCarts are so flexible. You have dozens of shapes and sizes to choose, plus over 50 accessories to configure your cart exactly the way you want.

And they have a Lifetime Warranty! Made of steel and high density particle board, these AnthroCarts are as tough as nails.



See them all in our catalog, then call us direct to order. We'll ship to you the very next business day!



Call for your free catalog:

800-325-3841

6:00 AM to 6:00 PM PST, M-F



**Anthro Corporation®
Technology Furniture®**
10450 SW Manhasset Dr.
Tualatin, OR 97062
Fax: 800-325-0045
E-mail: sales@anthro.com

Since 1984. Prices from \$299. For a lower cost line for the home, ask for our SOHO catalog. GSA contract. Available for OEM applications. Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

Macworld

PRESIDENT/PUBLISHER	Colin Crawford
ASSISTANT TO THE PRESIDENT	Sharon Sanderson
CHIEF OPERATING OFFICER	Stephen Daniels
BUSINESS MANAGER	Lis Buckingham
FINANCE ASSISTANT	Eos de Feminis
DIRECTOR OF HUMAN RESOURCES	Shelly Ginenthal
EMPLOYEE RELATIONS MANAGER	Marisa Chow
NETWORK MANAGER	Walter J. Clegg
IS TECHNICIANS	Dave Johnson, Theodore Kim
PROGRAMMER/ANALYST	Frederic Desbois
ADMINISTRATIVE ASSISTANT	Ginger Von Wening
CORPORATE BUSINESS MANAGER	Christina W. Spence
ACCOUNTING/OPERATIONS	Pat Murphy
ACCOUNTING/FACILITIES MANAGER	Michelle Reyes

Macworld, published by Macworld Communications, Inc., a wholly owned subsidiary of International Data Group, publishes 27 local-language editions of *Macworld* around the world. *Macworld* also sponsors the Macworld Expo in 12 cities around the world and has interests in book and CD-ROM publishing, online services, and international research. Headquartered in Boston, International Data Group has annual revenues of more than \$1.1 billion and 7200 employees. Its publishing subsidiary, IDG Communications, publishes more than 235 newspapers and magazines in 65 countries. IDG's trade book division, IDG Books Worldwide, is the fastest-growing computer book publisher with 50 percent of the top ten selling computer books, with foreign translations in over 24 languages. IDG's research subsidiary, International Data Corporation (IDC), is the leading market-research and analysis firm covering the computer field. Its exposition management subsidiary, IDG Exposition Services, runs 64 computer-related exhibitions and conferences in over 22 countries. International Data Group's publications include: ARGENTINA'S Computerworld Argentina, Infoworld Argentina; ASIA'S Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia; AUSTRALIA'S Computerworld Australia, Australian PC World, Australian Macworld, IDG Sources, Reseller, Network World, Mobile Business Australia; AUSTRIA'S Computerwelt Oesterreich, PC Test, BELGIUM'S Data News (CW); BRAZIL'S Computerworld, Game Power, Super Game, Gamepro, Mundo IBM, Mundo Unix, PC World; BULGARIA'S Computerworld Bulgaria, Edword, PC & Mac World Bulgaria, Network World Bulgaria; CANADA'S Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; CHILE'S Computerworld, Informatica; COLOMBIA'S Computerworld Colombia; CZECH REPUBLIC'S Computerworld, Elektronika, PC World; DENMARK'S CAD/CAM WORLD, Communications World, Computerworld Denmark, LOTUS World, Macintosh Produktkatalog, Macworld Denmark, PC World Denmark, PC World Produktguide, Windows World; ECUADOR'S PC World; EGYPT'S Computerworld Middle East, PC World Middle East; FINLAND'S MikroPC, Tietovaristo; FRANCE'S Distributrice, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux; GERMANY'S Computwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Management, Macwelt, Netzwerk, PC Welt, PC Woche, Publish, Unit; GREECE'S Infoworld, PC Games; HUNGARY'S Alaplap, Computerworld SZT, PC World, PC Virág; INDIA'S Computers & Communications; IRELAND'S ComputerScope, PC World; ISRAEL'S Computerworld Israel, PC World Israel; ITALY'S Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; JAPAN'S Information Systems World, Computerworld Today, Nikkei Personal Computing (PCW), Macworld Japan, SunWorld Japan, Windows World; KENYA'S East African Computer News; KOREA'S Computerworld Korea, Macworld Korea, PC World Korea; MEXICO'S Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows; THE NETHERLANDS' Computerworld (CW), Computerworld Total, LAN Magazine, MacWorld; NEW ZEALAND'S Computer Listings, Computerworld New Zealand, New Zealand PC World; NIGERIA'S PC World Africa; NORWAY'S Computerworld Norge, CW/World, Lotusworld Norge, Macworld Norge, Networkworld, PC World Ekspres, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld, IDG Direct Response; PANAMA'S PC World Panama; PERU'S Computerworld Peru, PC World; PEOPLE'S REPUBLIC OF CHINA'S China Computerworld, China Inforworld, China Network World, PC World China, IDG Shenzhen's Computer News Digest, Electronics International, IDG HIGH TECH Beijing's New Product World; PHILIPPINES' Computerworld, PC World; POLAND'S Computerworld Poland, PC World/Komputer; PORTUGAL'S Cerebro/PC World, Correio Informatico/Computerworld, Macin; ROMANIA'S PC World, Computerworld; RUSSIA'S Computerworld-Moscow, Mir-PC, Sety; SLOVENIA'S Monitor Magazine; SOUTH AFRICA'S Computing S.A., Network 'World S.A., Computer Mail; SPAIN'S Amiga World, Computerworld Espana, Comunicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro); SWEDEN'S Attack, ComputerSweden, Corporate Computing, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Datalingenjörer, Maxi Data, Windows World, SWITZERLAND'S Computerworld Schweiz, Macworld Schweiz; TAIWAN'S Computerworld Taiwan, Global Computer Express, PC World Taiwan; THAILAND'S Thai Computerworld; TURKEY'S Computerworld Monitor, Macworld Turkey, PC World Turkey; UKRAINE'S Computerworld; UNITED KINGDOM'S Computing/Computerworld, Connexion/Network World, Lotus Magazine, Macworld, Sunworld; UNITED STATES' AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Desktop Video World, DOS Resource Guide, Electronic Entertainment Magazine, PlayRight, Power PC World, Federal Computer Week, Federal Integrator, GamePro, IDG Books, InfoWorld, InfoWorld Direct, Laser Event, Macworld, Multimedia World, Network World, PC Letter, PC World, Publish, SunWorld, SWATPro, Video Event; VENEZUELA'S Computerworld Venezuela, MicroComputerworld Venezuela; VIETNAM'S PC World Vietnam.

YOUR SINGLE BUTTON INTERNET ACCESS

NET COMMANDER

EASY TO SET UP - EASY TO USE - EASY ACCESS



NET COMMANDER is an all-in-one Internet software package that has everything you need. Starting with a single button Internet registration, automatic set up and configuration of over 30 Internet applications including Phone, E-mail, News Reader, Luckman's Official World Wide Web Yellow Pages, Virtual Reality, and all audio players and video viewers to fully experience the Net. The Internet will be yours to command! Call Today - 1-800-711-2676 | \$79.99

Call Today: 1-800-711-2676 | \$79.00 SRP



Luckman Interactive, Inc.

E-Mail: info@luckman.com

<http://www.luckman.com>

1055 West 7th Street, Suite 2580, Los Angeles, CA 90017

Macworld

New! Expansion Bay 230MB Magneto-Optical Drive

VST Technologies' Expansion Bay Magneto-Optical Drive is the perfect portable backup solution for PowerBook 190 & 5300 users.

Each removable Magneto-Optical disk holds up to 230MB of data, providing virtually limitless storage and archiving space! Plug-N-Play simplicity.

- Hot swappable — no need to sleep, shutdown or restart
- Uses ISO standard 128MB and 230MB MO disks — compatible with desktop MO SCSI drives
- Disks offer unlimited read and rewrite — provides reliable, inexpensive archiving of your most valuable files
- Part # MOD5000 — \$449.95 MSRP



Also for PowerBook 190s & 5300s!

Charger & Internal Batteries



Charger 5000 MSRP \$189.95
PowerBook 190/5300 Internal Battery
MSRP \$169.95
Battery/Charger bundle MSRP \$329.95

Expansion Bay Hard Drives



540MB Hard Drive MSRP \$549.95
810MB Hard Drive MSRP \$699.95
1.2 GB Hard Drive MSRP \$879.95

Auto Adapter



Auto Adapter 5000 MSRP \$99.95

VST
TECHNOLOGIES

VST Technologies • 1620 Sudbury Road • Suite 3 Concord, MA 01742
(508) 287-4600 • (508) 287-4068 Fax

Circle 73 on reader service card

Plug-In With Xaos Tools & Unleash Your Creative Power!

TypeCaster: 3D Text Plug-In
• Render any Postscript® or TrueType® font
• Quick & Easy 3D Text inside Photoshop®
• Bonus CD-ROM with 200 Free Textures

Paint Alchemy
• Turn any Image into a Painting
• 101 Pre-Installed Paint & Organic Styles

Terrazzo: Seamless Tiling Plug-In
• The Ultimate Web Page Tile Generator
• Creates Limitless Tiled Textures & Patterns

Coming in April Version 2 Native Upgrade

MacWarehouse
800-255-6227

MacZone
800-248-0800

for more on powerful, easy-to-use
adobe photoshop™ plug-ins call

800-289-9267
<http://www.xaos-tools.com>



XAOSS tools

© 1996 Xaos Tools Inc., 600 Townsend, Ste. 270E, San Francisco, CA 94103 PHONE: 415-487-7000 FAX: 415-559-9886 AOL: XaosTools Internet: macinfo@xaostools.com. Point Alchemy, Terrazzo & TypeCaster are trademarks and Xaos Tools is a registered trademark of Xaos Tools, Inc. All other product names are trademarks of their respective owners. "The Face" by Vic Step, "Apples & Oranges" by David Teich.

Circle 13 on reader service card

EDITOR-IN-CHIEF

Adrian Mello

EDITORIAL

EXECUTIVE EDITORS	Galen Gruman, Carol Person
EDITORIAL PRODUCER	Barbara Assadi
DIRECTOR OF EDITORIAL OPERATIONS	Jane Lagas
SENIOR EDITOR/FEATURES	Charles Piller
SENIOR EDITOR	Howard Baldwin
SENIOR ASSOCIATE EDITOR/DEPARTMENTS	Marjorie Baer
SENIOR ASSOCIATE EDITORS	Anita Epler, Dan Littman
ASSOCIATE EDITOR/REVIEWS	Wendy Sharp
ASSOCIATE EDITORS	Cathy E. Abes, Linda Comer, Cameron Crotty, Elizabeth Dougherty
ASSISTANT EDITORS	Suzanne Courteau, Jim Feeley
ADMINISTRATIVE ASSISTANT	Roxanne Gentile
ASSISTANT TO THE EDITOR-IN-CHIEF	Patricia Carberry-Harris
CONTRIBUTING EDITORS	Robert C. Eckhardt, Erfert Fenton, Jim Heid, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, Steve Roth, Joseph Schorr, Charles Seiter, Franklin N. Tessler
INTERNATIONAL EDITORS	Osmund Iversen, Australia; Vinicius Souza, Brazil; Marianne Fajstrup, Denmark; Michael Thevenet, France; Stephan Scherer, Germany; Giulio Ferrari, Italy; Osamu Honma, Japan; Jessica Monreal, Mexico; Oscar Kneppers, Netherlands; Torvald Ostvang, Norway; Alvaro Ibariez, Spain; Nicklas Mattsson, Sweden; Cuno Schneeberger, Switzerland; Bahattin Apak, Turkey; Peter Worlock, United Kingdom

LAB

LAB DIRECTOR	Lauren L. Black
SENIOR TECHNICAL ANALYSTS	Mark Hurlow, Jeff Sacilotto
TECHNICAL ANALYSTS	Matthew R. Clark, Danny Lee
INVENTORY CONTROLLER	Paul Brown

COPY EDIT AND EDITORIAL PRODUCTION

ASSISTANT MANAGING EDITOR	Ruth Henrich
SENIOR COPY EDITOR	Katherine L. Ulrich
SENIOR PRODUCTION EDITOR	Lisa Braziel
COPY EDITORS	Paul-Michael King, Gail E. Nelson
ASSISTANT PRODUCTION EDITOR	Jackie Goodman

ART AND DESIGN

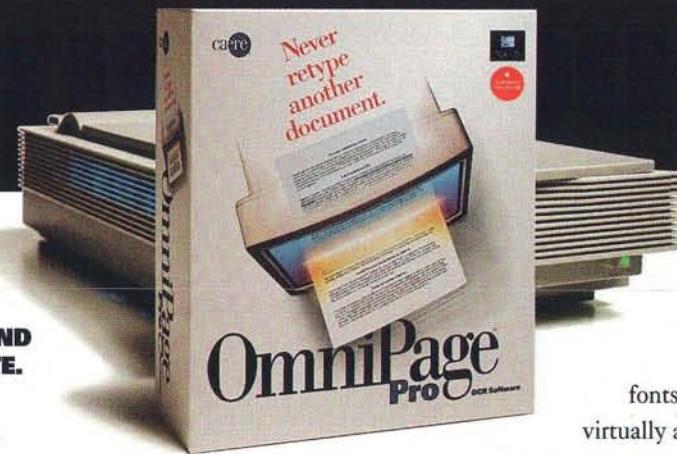
ACTING DESIGN DIRECTOR	Leslie Barton
ART DIRECTOR	Joanne Hoffman
SENIOR DESIGNER/INFORMATIONAL GRAPHICS	Arne Hurty
ASSOCIATE ART DIRECTOR	Sylvia Benvenuti
ASSOCIATE DESIGNER	Tim Johnson
SENIOR DESIGN ASSOCIATE	Martha Katt
DESIGN ASSOCIATES	Rachel Arnold, Belinda Chlouber

ONLINE

EDITOR	Suzanne Stefanac
ONLINE SALES MANAGER	Jeff Julian
WEB ADMINISTRATOR	Chip Carman
ONLINE ADMINISTRATOR	Steve Costa
CONTENT ENGINEER	Paul Devine
ONLINE PRODUCTION EDITOR	Matthew Hawn
PRODUCTION ASSISTANT	Kristine Moss
FLUEGELMAN INTERN	Karen Liberatore

**NEW
VERSION 6.0**

TURN YOUR SCANNER INTO A WORLD-CLASS TYPIST.



INTRODUCING OMNIPAGE PRO 6.0— IT'S FASTER, EASIER AND MUCH MORE ACCURATE.

Tired of retyping faxes, reports, articles, even letters into your Macintosh? With OmniPage® Pro 6.0 and your scanner, you can accurately enter thousands of words per

Recognition (OCR) software converts your scanned pages to editable text and graphics in seconds for use in popular Mac applications like Word, WordPerfect, Quark Xpress, Excel and many others. So you get to spend more time producing instead of manually typing.

And OmniPage Pro 6.0's blazing speed, which is even faster on Power Mac systems, is only outdone by its superior accuracy. It recognizes all

fonts at virtually any size. It flags

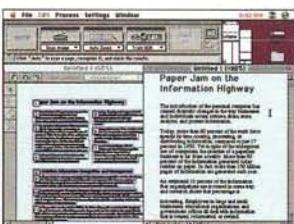
suspicious words, then corrects them for you. It accurately interprets hard-to-read faxes and copies using grayscale information. And it even reads unique characters and

*"Powerful and faster,
Caere's OCR stalwart scores
high on accuracy."*

MacUser January 1995

special symbols.

Without doubt OmniPage Pro 6.0 is the smartest OCR software you can buy. So call and order a copy today or visit your local reseller.



OmniPage Pro 6.0 is ten times quicker than the fastest typist—and still delivers pinpoint accuracy.

minute with the simple push of a button.

OmniPage Pro 6.0's industry-leading Optical Character

SPECIAL UPGRADE

\$149*

70% OFF RETAIL PRICE

Upgrade from OmniPage Limited Edition, OmniPage Lite, WordScan or other versions of OmniPage (including those bundled in your scanner) and get the best OCR!

- 65% more accurate
- 35% faster
- Enhanced, easy-to-use AutoOCR Toolbar™
- Retain original page layout with True Page®
- 24-bit image editor
- Accelerated for Power Macintosh
- Interactive Apple Guide assistance

800-736-5735

Call Ext. 80 today!

caere

*Suggested price US dollars—subject to change without notice. Offer valid in US and Canada only. Caere, the Caere logo, OmniPage, WordScan and True Page are registered trademarks and AutoOCR Toolbar is a trademark of Caere Corporation. All other names are the property of their respective holders. © 1995.

Circle 69 on reader service card

Macworld

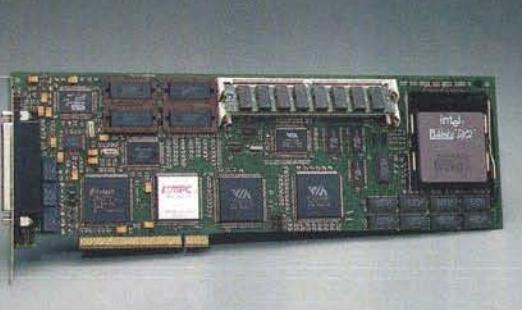
the ULTIMATE MAC PC CARD

Prices
start at:

\$599

Includes DX2/66,
4MB & MS-DOS

\$699 with Game Port Sound Blaster & Free Doom™ PC Game



MacPC™

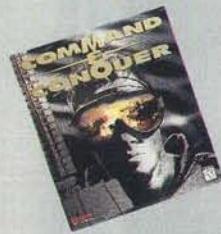
Put a MacPC Card into your Mac, and it becomes a PC, with your choice of DOS™, Windows® or Windows®95. Ideal for home, education, and small business.

- Runs all PC Games & Programs on your Mac!
- Game Port and 16 bit Sound Blaster® In/Out, Serial and Parallel Ports.
- MacPC runs on all PCI Power Macintoshes.
- MacPC options include: Networking Software, Windows or Windows 95, Intel®DX4/100 Processor, 1 Mb Video DRAM upgrade.

Available at:

MacPowerhaus (800) 615-3183
And other major Apple® retailers.

 **Orange Micro Inc.**
"16 Years of Innovation and Excellence"



© Orange Micro, Inc., 1996

Circle 33 on reader service card

DISPLAY ADVERTISING SALES

ASSOCIATE PUBLISHER	Matt Sweeney (415/978-3271)
NATIONAL SALES DIRECTOR	Steve Plevin (415/978-3138)
SALES DEPARTMENT COORDINATOR	Toni May (415/975-2638)
SALES DEVELOPMENT DIRECTOR	Suzanne Saluti (415/975-2624)
SALES DEVELOPMENT COORDINATOR	Leslie Black (415/978-3160)
NATIONAL ACCOUNTS MANAGER	Lois Brennan (415/978-3262)
ACCOUNT EXECUTIVE	Liz Pabon (415/978-3257)
NATIONAL ACCOUNTS MANAGER	Karl Elken (415/978-3155)
ACCOUNT EXECUTIVE	Christine Wong (415/978-3192)
ADMINISTRATIVE ASSISTANT	Eva Bosch (415/974-7310)
NATIONAL ACCOUNTS MANAGER	Sara Culley (310/545-0646)
ACCOUNT EXECUTIVE	Gabrielle Silverman Green (415/267-4471)
ADMINISTRATIVE ASSISTANT	Margaret Level Green (714/250-1307)
NATIONAL ACCOUNTS MANAGER	Cynthia Ramsey (201/243-1197)
NATIONAL ACCOUNTS MANAGER	Paul Bonarrigo (508/872-8600)
ACCOUNT EXECUTIVE	Kelly Burke (415/978-3164)
NATIONAL ACCOUNTS MANAGER	Lisa Ladle (800/779-5622)
ACCOUNT EXECUTIVE	Kathy Poppenhagen (708/827-4477)
ADMINISTRATIVE ASSISTANT	Kim Giovanni (708/827-4477)

MAIL ORDER/CLASSIFIED ADVERTISING SALES

ACCOUNT MANAGERS/MAIL ORDER	Edward Ramirez (415/974-7413), Lisa Weisberg (415/978-3117)
MACWORLD SHOPPER	800/888-8622
	Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414)
ACCOUNT MANAGER/MW DIRECTORY	Bethany A. Baller (415/978-3276)

MACWORLD GLOBAL PRODUCT SUPPORT CENTER

DIRECTOR OF MARKETING AND COMMUNICATIONS	Kimberlee A. Luedee
MARKETING ASSOCIATE	Alisson Walsh

MARKET RESEARCH

RESEARCH DIRECTOR	Linda Lawrence
RESEARCH ANALYSTS	Phillip Hibbert, Matt McAlister

MARKETING

MARKETING DIRECTOR	Cynthia Koral
MARCOM MANAGER	Rhona Hamilton
TRADE SHOW/EVENTS MANAGER	Anna Noetzel
MARKETING ASSOCIATE	Shannon McArdle

CIRCULATION

VICE PRESIDENT/DIRECTOR OF CIRCULATION	Angelina Beitia
SINGLE-COPY SALES DIRECTOR	George Clark
SENIOR CIRCULATION MANAGER	Lori Hitchcock
CIRCULATION MANAGER	Elizabeth Jensen
NEWSSTAND SALES MANAGER	Martin Garchar
PROMOTION MANAGER	Kelvin Gee
NEWSSTAND COORDINATOR	Dalia Schwartz
SUBSCRIPTION COORDINATOR	Peter Ho
NEW BUSINESS COORDINATOR	Geoffrey Walls
SUBSCRIPTION INQUIRIES	800/288-6848

PRODUCTION

VICE PRESIDENT/DIRECTOR OF MANUFACTURING	Anne Foley
PRODUCTION MANAGER	Cynthia Neustadt
ASSISTANT PRODUCTION MANAGER	David W. McAferty
BILLING INFORMATION MANAGER	So Fong Yip
DTP COORDINATOR	Clayton Haberman
BILLING ASSISTANT	Lily Cheung

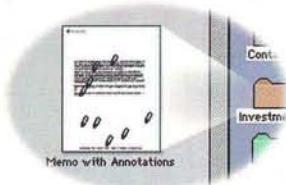
New PaperPort Vx.

Accelerated for Power Macintosh

INCLUDES
\$249 WORTH
OF FREE
SOFTWARE!

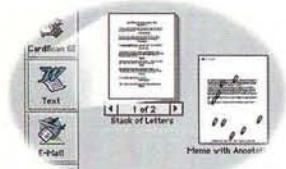
New PaperPort Vx.

The easiest way to get paper into your Mac.



Organize everything easily.

Mark-up your documents, then drag them to and from folders on your hard disk. Instantly find whatever you need with our powerful search tools.



Copy, fax, and edit—at your fingertips.

Just drag and drop your document to your fax, e-mail, word processors, printers—and more. You'll never again have to babysit the fax machine or wait in line for the copier.

With Visioneer's new PaperPort Vx, you can get paper into your Mac in as little as two seconds—and put it to work with unmatched simplicity and speed.

Get paper in fast.

Just feed any piece of paper (up to 8.5" wide and 30" long)—a letter, photo, newsclip, receipt, business card—into PaperPort Vx. In seconds, it appears on your screen. Crisp and clear. Easy to read. And ready to be faxed or e-mailed, edited or copied, printed or filed with incredible ease.

Put it to work—instantly.

PaperPort Vx has direct links to hundreds of the most popular software applications, so you can automatically integrate paper into the applications you use everyday—your fax, on-line service, word processor, contact manager, spreadsheet, and many more.

Do even more with \$249 worth of free software.

PaperPort Vx includes the latest OmniPage LITE™ OCR software to transform scanned paper into editable

text; Corex CardScan SE™ to automatically turn your pile of business cards into an electronic card-file of contacts; and PictureWorks Copier™ to turn your computer and printer into an instant copy machine—with powerful features to resize your image and put multiple items (like receipts and business cards) on a single page.

Superior readability, superior results.

Only PaperPort Vx gives you exclusive SharpPage™ technology. So you get crisper scanned text—and your fax recipients get extremely legible pages, with no unreadable black blotches. And with up to 256 shades of gray, PaperPort Vx accurately captures your snapshots and graphics—even magazine pages.

So, instead of running papers around your office, use PaperPort Vx to zip them into your Mac where you can put them to work. To find out more, call us at 1-800-787-7007, Ext. 604 or see your local dealer.



Super-small, super convenient.
PaperPort Vx fits between your keyboard and monitor, and installation couldn't be easier. Just plug it into your modem or printer port.

MW ★★★★☆



Award-winning.
PaperPort has won the most prestigious awards for its usability and design.



VISIONEER

PAPERPORT **Vx**

"The Best Mac Desk Ever."

NEW!

- Ergonomic
- Fully Adjustable
- Strong
- Guaranteed
- VAR Inquiries Welcome

a g i o™

BEAVERTON, OREGON



Free Catalog! 800.688.2446

| Phone 503.690.1400 | FAX 503.690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436 |

SUPPORTS WINDOWS 95
Simply the fastest way to run
DOS and Windows
on your Power Macintosh

Run any Windows® 95, Windows® or DOS application on your Power Macintosh® 6100, 7100 or 8100 computer.

- Plugs into the PDS slot to deliver the fastest performance.
- Processes instructions at up to 100MHz with dedicated 486 or 5x86 processors.
- Provides direct access to all your Mac peripherals including monitor, printer, hard drive, CD ROM drive, network, modem, and more.
- Copy and paste information between Macintosh and Windows applications.
- Dual-processing runs Mac and DOS/Windows applications at the same time.
- Optional Ethernet and Token Ring support with dual TCP/IP.
- Supports SoundBlaster® 16 with optional daughtercard.

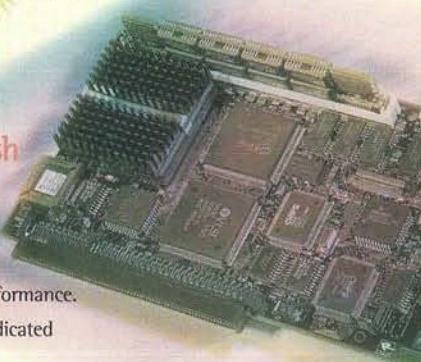
Prices start at \$695

Reply's original DOS on Mac card is also available for Macintosh Centris 610 and 650 computers and Quadra 610, 650, 700, 800, 900 and 950 computers.

PCI solutions available in the second quarter of 1996.

Reply and the Reply logo are trademarks of Reply Corporation.

All other product names referenced herein are trademarks of their respective companies.



MW
EDITORS' CHOICE

CALL 1 800 801 6898



tel 408 942 4804 fax 408 956 2793
<http://www.reply.com>

Macworld

HOW TO CONTACT MACWORLD

Subscription Questions

Phone Mainland USA 800/288-6848
All other locations 303/604-1465
Fax 303/604-7644
U.S. Mail Subscription Services
P.O. Box 54529, Boulder, CO 80322-4529
E-Mail suhelp.macworld@neodata.com

REPRINTS AND PERMISSIONS Address requests for reprint orders and for permissions to copy editorial for other purposes to Reprints and Permissions, Editorial Department.

Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use only—for the flat fee of \$1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970.

Back Issues of Macworld

Back issues are \$7 per issue for U.S. delivery (\$12 overseas); prepayment in U.S. funds is required. Make checks or money orders payable to Macworld Magazine and mail along with a written request to Macworld Back Issues, c/o Snyder Newell, P.O. Box 7046, San Francisco, CA 94120-9727.

Macworld in Microfilm

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

Macworld Editorial

Our offices are located at 501 Second St., San Francisco, CA 94107; 415/243-0505, fax 415/442-0766. Internet: macworld@macworld.com; 70370.702@compuserve.com; macworld1@applelink.apple.com.

Readers can contact editors directly via the Macworld forum on America Online (keyword *Macworld*) or Macworld Online's Web site (<http://www.macworld.com>).

LETTERS TO THE EDITOR Direct all comments, questions, and suggestions regarding any aspect of the magazine to Letters to the Editor (letters@macworld.com). All mail is read by our editor. We reserve the right to edit all submissions; letters must include your name, address, and telephone number.

QUICK TIPS Send your questions or tips on how to use Mac computers, peripherals, or software to the attention of *Quick Tips*. Please include your name, address, and telephone number.

CONSUMER ADVOCATE Been burned? Ripped off? Direct your concerns (by mail only) to *Consumer Advocate*. Include your address and phone number as well as the address of the vendor. We also encourage you to include copies of correspondence exchanged with the vendor in question.

BUGS AND TURKEYS Send us descriptions of turkeys (flaws in conception or design) and bugs (defects or flaws in execution) with your telephone number, mailing address, and T-shirt size.

STREETWISE SHOPPER Vendors and resellers, fax requests to obtain an application for inclusion of special product promotions in *Streetwise Shopper*.

WRITING FOR MACWORLD If you're interested in writing for us, send a self-addressed, stamped envelope with a request for our writer's guidelines. Do not send unsolicited manuscripts.

FOUNDER

David Bunnell

FOUNDING EDITOR

Andrew Fluegelman 1943-1985

Macworld is a publication of Macworld Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, The Desktop Critic, Expert Graphics, Quick Tips, Star Ratings, Buyers' Tools, Streetwise Shopper, and Conspicuous Consumer are registered trademarks of International Data Group, Inc. Power PC World and Secrets are trademarks of IDG, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACLETTER and POWERBOOK are trademarks of Apple Computer, Inc. Printed in the United States of America. Copyright © 1996 Macworld Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information.



QuickBooks is right for your business, or you don't pay.

**NEW!
VERSION
4.0**



We guarantee
QuickBooks® will
fit your business
so well, you'd swear
it was custom made
just for you.

Tailored to your industry...

A new breakthrough we call the EasyStep interview makes this unprecedented guarantee possible.

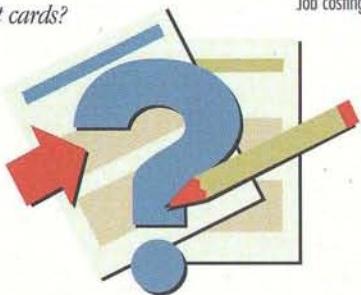
It starts by asking you what industry you're in, so your books are automatically set up correctly from the outset. You can also print out a guide full of specific, helpful tips, written just for your industry.

But your EasyStep interview goes much deeper than that.

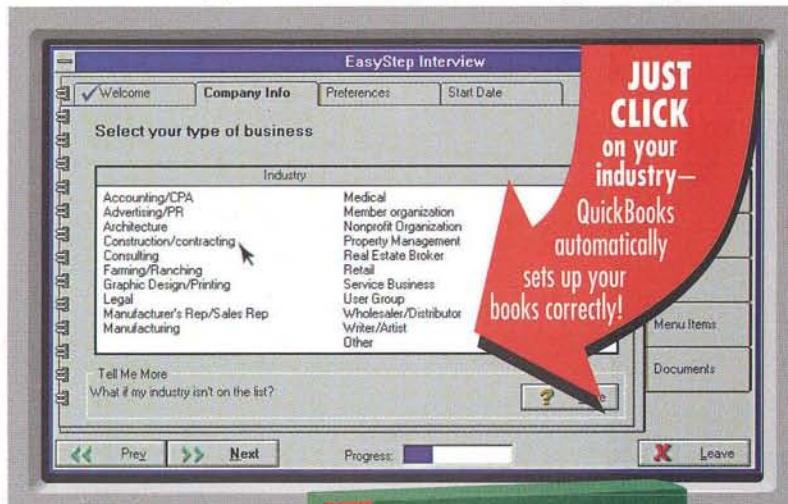
...customized for the way you work.

Believe it or not, the EasyStep Interview actually learns the unique, individual ways you like things done in your business. And automatically sets up your books to follow your procedures. For example, do you:

- use multiple credit cards?
- apply taxes to invoices?
- keep inventory?
- have a payroll?
- track time by project or job?
- create estimates?
- and much, much more.



Based on your answers, QuickBooks turns on only the features you need. (As your business grows and changes, it's easy to add the others.)

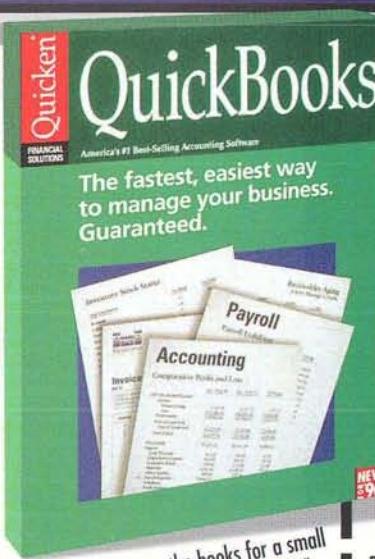


New QuickBooks 4.0

Invoicing and accounts receivable.
Checkwriting and accounts payable.
Purchase orders and inventory.
Payroll and payroll tax forms.
Over 80 financial reports.
And much more!

New QuickBooks Pro™ 4.0

Integrates with the above:
Time tracking.
Estimating.
Job costing.



"If you're keeping the books for a small business, this is the package to get."
PC Computing, Feb.'96

"A winner by all accounts."
Windows Magazine, Feb.'96

**NEW
\$96**

**Try QuickBooks or \$800!
QuickBooks Pro for only**

Pay only \$8 shipping and handling now to try either product. If you decide to keep using it after 30 days, pay just \$119.95 for QuickBooks or just \$189.95 for QuickBooks Pro.

1-800-781-6999 Ext. 702 441
to order 24 hours a day, 7 days a week.

Offer for first time users only. Credit card orders only. Add sales tax where applicable. International shipping extra. Offer expires 7/30/96.

QuickBooks is also available for Windows and DOS. QuickBooks Pro is also available for Windows. Pricing and features vary.

Result: The first and only accounting software that feels as natural as if you'd designed it for yourself.

No start-up hassles.

QuickBooks EasyStep Interview eliminates your start-up hassles. Just answer the questions, and that's it! You're up and running right away.

The easy way to control your business.

QuickBooks eliminates your bookkeeping hassles and shows you exactly what's going on in any part of your business — instantly, any time.

Yet it's amazingly easy. You never have to enter anything twice—and you don't have to learn a thing

about accounting. If you know how to fill out a check or an invoice, you'll have no trouble with the familiar screens in QuickBooks.

Try it, risk-free.

If you'd like to have more time for running your business and spend less time doing the books, don't put it off. Try QuickBooks (or QuickBooks Pro) now with this limited-time special offer.

Mac System Requirements: System 7.0 or higher, and 8MB of RAM. Recommended: 68030-25MHz processor or faster, including IIcx, IIvx, IICi, Centris, LC III, LC 520 or higher, Performa 450 or higher, or any Quadra or Power Macintosh machine. Hard disk with 21MB free disk space. Supports 12 inch or larger B/W monitors, or 13 inch or larger color monitors with 640x400 resolution or better. Also supports PowerBook displays. ©1996 Intuit Inc. QuickBooks is a registered trademark, and QuickBooks Pro is a trademark of Intuit Inc.

in
here
mistakes

a r e

forgiven

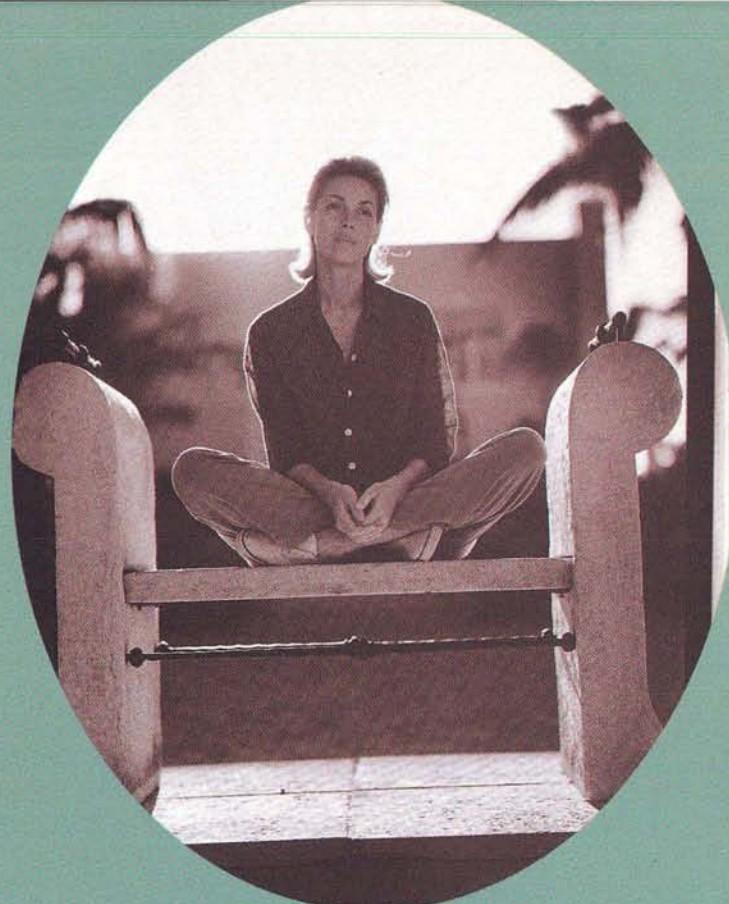
You are on
Your Power Mac.TM

Have a
You are in
Microsoft[®] Word 6.0.1.

A job to
Your mind
Is racing.

To
Your fingers
Are racing
To keep up

Do
With your thoughts.



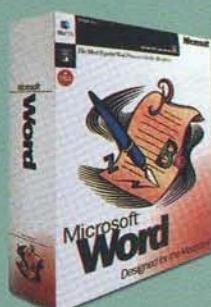
You begin
A new sentence
With
RA lowercase letter.
IThis mistake is corrected
TAutomatically.
E

You begin a new
Sentence with
OAn abbreviation
UYou created.
WIt becomes
RAn entire phrase.
IAutomatically.
EAnd 100 levels
VOf Undo.
RAnd 100 levels
EOf Redo.
IJust in case.

YIn
OPrint preview
U

RYou change
EMargins
VTypefaces
IAnd words.
S

YUntil you have finished.
OYou click AutoFormat.
UAnd the block of words
Can become
WA letter.
RA proposal.
IA story.
TAutomatically.
EYou write. Because you can.



Microsoft[®]

WHERE DO YOU WANT TO GO TODAY?™

PostScript™ With Pizzazz!



Finally, vector illustration and Fractal Design's unique **Natural-Media®** paint technology join forces in new Painter 4! With Painter's dazzling new **Shapes™** feature, full bitmap editing is now combined with Painter's powerful drawing tools. And Shapes objects also have fully-adjustable opacity and compositing capabilities.

So you can import artwork from Adobe Illustrator™, Macromedia Freehand™ or CorelDraw™ and give it transparency, texture and genuine Natural-Media flair. We call this phenomenon "PostScript™ With Pizzazz!" And with Painter 4 you can explore

Tile Mosaics, create **Image Maps**



the world of **Web Graphics** as well as turn photographs into paintings. Or combine painting and photography with the **Image Hose™**. Then add to your Image Hose nozzles

Garden Hose™.

You can even use Painter's

incredible

Net Painter feature to collaborate with other artists or art directors over the Internet!

Painter. **The World's Leading Paint Program** for

Macintosh®, Power Macintosh®, Windows™ and Windows 95™ Native. Go for 4 today!

To Upgrade
Or For More Information, Call
800-297-COOL
Extension 1411, Department E1A



FRAC
TAL
DESIGN
CORPORATION

© Copyright 1996 Fractal Design Corporation. All rights reserved. Fractal Design Painter and Natural-Media are registered trademarks of Fractal Design Corporation. Image Hose and Shapes are trademarks of Fractal Design Corporation. All other trademarks are the property of their respective holders.

Letters

A Note on Copland

I RECENTLY PURCHASED A DAYSTAR PowerPro 601 upgrade for my Mac Centris 650. I am very pleased with its performance, but I was surprised and shocked to read in "Why Apple Can't Meet Demand" (January 1996) that Copland will not support PowerPC accelerator cards. When I called Apple, the technical representative I spoke with claimed to know nothing about this. Greg Erickson, the DayStar rep who answered my E-mail inquiry, responded promptly but didn't shed much light on the issue. His statement:

"The article did state that Copland will require controller chips found on Power Mac computers but not PowerPC upgrade cards. However, Copland will not be available for at least a year and feature sets and operating requirements are subject to change. Apple, too, has a lot of PowerPC upgrade cards in the field. It is certainly in their interest to broaden the list of supported Macs!"

I'm writing to ask if *Macworld* could publish more details on this important issue. There must be many users of PowerPC-upgraded Macs who don't want to be excluded from enjoying the benefits of Copland.

GARY SHACKELFORD
via the Internet

According to Apple's OS technologies department, Copland will not run on PowerPC-upgraded 680X0 Macs or 500-series PowerBooks, whether the upgrade cards were purchased from Apple or DayStar. Apple will introduce a 680X0 version of some Copland technologies, such as the interface, but that solution will not support true multitasking and multithreading, as Copland will.

Duo 200 owners who opt for the PowerPC upgrade will be able to take full advantage



of Copland, since the PowerPC upgrade will replace the entire motherboard.—Ed.

Game Point

AS THE FLIGHT SIMULATORS I USE become more complicated, I find I need a reminder for which keys do what. So I designed a series of overlays in Adobe's PDF format for several games: A-10 Attack, A-10 Weapons Loadout Chart, Chuck Yeager's Air Combat, Dogfight City, Falcon, Flight Simulator 4, Hellcats and Leyte Gulf, and F/A-18 Hornet.

They're all available on my home page (<http://www.fairmont.wvnet.edu/www/webteam/bob/overlays/overlays.html>) and should print easily on just about any printer. PDF files require Acrobat Reader to view or print out, so I also have a link to Adobe's Web page.

BOB HEFFNER
via the Internet

IN HIS REVIEW OF DOMARK SOFTWARE'S Out of the Sun (January 1996), Mel Beckman waxed enthusiastic about the game's historical accuracy. I am wary of his enthusiasm, though, because according to the graphic accompanying the review, the people at Domark Software (and evidently Mel) don't know that the B-25 Mitchell was a product of North American Aviation, not Martin Aircraft. Martin Aircraft produced the B-26 Marauder, another twin-engine medium bomber of the era.

GARY K. MCCORMICK
San Jose, California

Ouch! We stand corrected.—Ed.

AS ALWAYS, I ENJOY YOUR MAGAZINE for all the information it provides, both fun and business-related. I am still only part way through the January issue, but I thought you might want to know about a game site you did not mention in "Game On" (*Macworld Online*, January 1996). Why pay \$9.95 per month to Outland, fanatic backgammon players, when you can play for free via FIBS (First Internet Backgammon Server)? The interface is a little bare, and the screen constantly scrolls as players log in and out, start and finish games and matches, and so on, but I have found it addictive enough to make do. For those of us who are not into supergraphic, joystick-slammin' action stuff, it is a blast. I have played against folks in Germany, Italy, and Greece, as well as throughout the United States. If only I could find some interested flesh-and-blood types to start a local club, maybe I could get off FIBS and get back to work!

ADAM TYSON
via the Internet

continues

VECTOR Effects™

EXPANDS YOUR ILLUSTRATOR AND FREEHAND PALETTES

3D Transform



ShatterBox



Warp Frame



ShadowLand



and more!

*"...a wonderful collection...
the kind of product every graphic
artist should keep close at hand..."*

MACWORLD

★★★★★/8.5

1.800.472.9025

Mention Dept. VM04

MetaTools™

The Visual Computing Software Company

805.566.6220 fax: 805.566.6367

Contact us in cyberspace: metasales@aol.com

<http://www.metatools.com>

©1996 MetaTools, Inc. 6363 Carpinteria Ave., Carpinteria, CA 93013. Vector Effects and MetaTools are trademarks of MetaTools, Inc. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Used under license. All other product names are trademarks of their respective owners.

Circle 4 on reader service card

CORRECTIONS

- The Performa 6300 does not come with a second serial port or an MPEG video-playback card as stated in January's New Products—Apple's plans changed after our issue went to press.
- The correct phone number for Creative Solutions is 410/766-4080 ("New Products," News, February 1996).
- The correct price for Meadow Information Systems' AutoPrice is \$1895 ("New Products," News, February 1996).

Searching for backgammon on the World Wide Web reveals a number of tasty-looking sites. Or you fanatical backgammon players can just Telnet directly to FIBS at fraggel65.mdstud.chalmers.sc:4321 and log in as a guest, then type help for an introduction to FIBS. If the command-line interface distresses you too much, download Paul Ferguson's MacFIBS 2.0.3 graphical front end from <ftp://ftp.best.com/pub/fergy>.—Ed.

QuickTake Retake

IN YOUR DIGITAL CAMERAS REVIEW (January 1996), Deke McClelland says, "You should avoid quarter-screen photos—one image contains 77,000 pixels, less than half the number used to print the yellow F at the beginning of this article." That may be true if the F Deke was referring to was printed on a 600-dpi printer. At screen resolution, it would have taken up, at most, 1024 pixels—the same size as an icon (32 by 32 pixels). And a 320 by 240 "quarter-screen" image is a lot bigger, at screen resolution, than an icon.

SIMON RINGSMUTH

via the Internet

That yellow F, as printed in the magazine, measured 15 points tall by 12 wide, and was printed at 2400 dpi. As a result, it contained around 200,000 pixels, more than 250 percent as many as a quarter-screen image. Quarter-screen images are far too small for printing purposes; even if you don't notice the graininess, jagged edges, and soft focus that comes with low resolution, you can rest assured some of your readers will. Quarter-screen digital-camera pictures are also ill-suited to screen display, since the compression is more obvious on screen than it is in print. If you shoot your pictures at maximum resolution and resample them down by 50 percent, the compression becomes almost invisible.—Ed.

Why I Love Apple

WITH THE HIGH-PRESSURE TV COMMERCIALS and magazine blitzes currently going on between Macintosh and Microsoft's Windows 95, I found this simple diagram on ease of use to be the Last Word! I recently received my free copy of The Merchant: Hassle-free Shopping on CD-ROM. When I opened the packaging, I found the following instructions quite humorous.

How do I get started?

For Windows Users:

1. From the Program Manager, choose Run from the file menu. 2. In the Command Line box, type D:\INSTALL (where D is the letter assigned to your CD-ROM drive), and click OK. To run The Merchant, double-click The Merchant icon. Start shopping!

For Windows 95 Users:

Windows should start The Merchant automatically. The first time it is run, click on Install The Merchant. If Windows does not start the program automatically:

1. Choose Run from the Start menu.
2. In the Open box, type D:\INSTALL (where D is the letter assigned to your CD-ROM drive), and click OK. Then, to run The Merchant, select Start The Merchant when the CD-ROM is first inserted, or from the Start menu select Programs>Merchant For Men>The Merchant. Start shopping!

For Mac Users:

Double-click The Merchant icon. Start shopping!

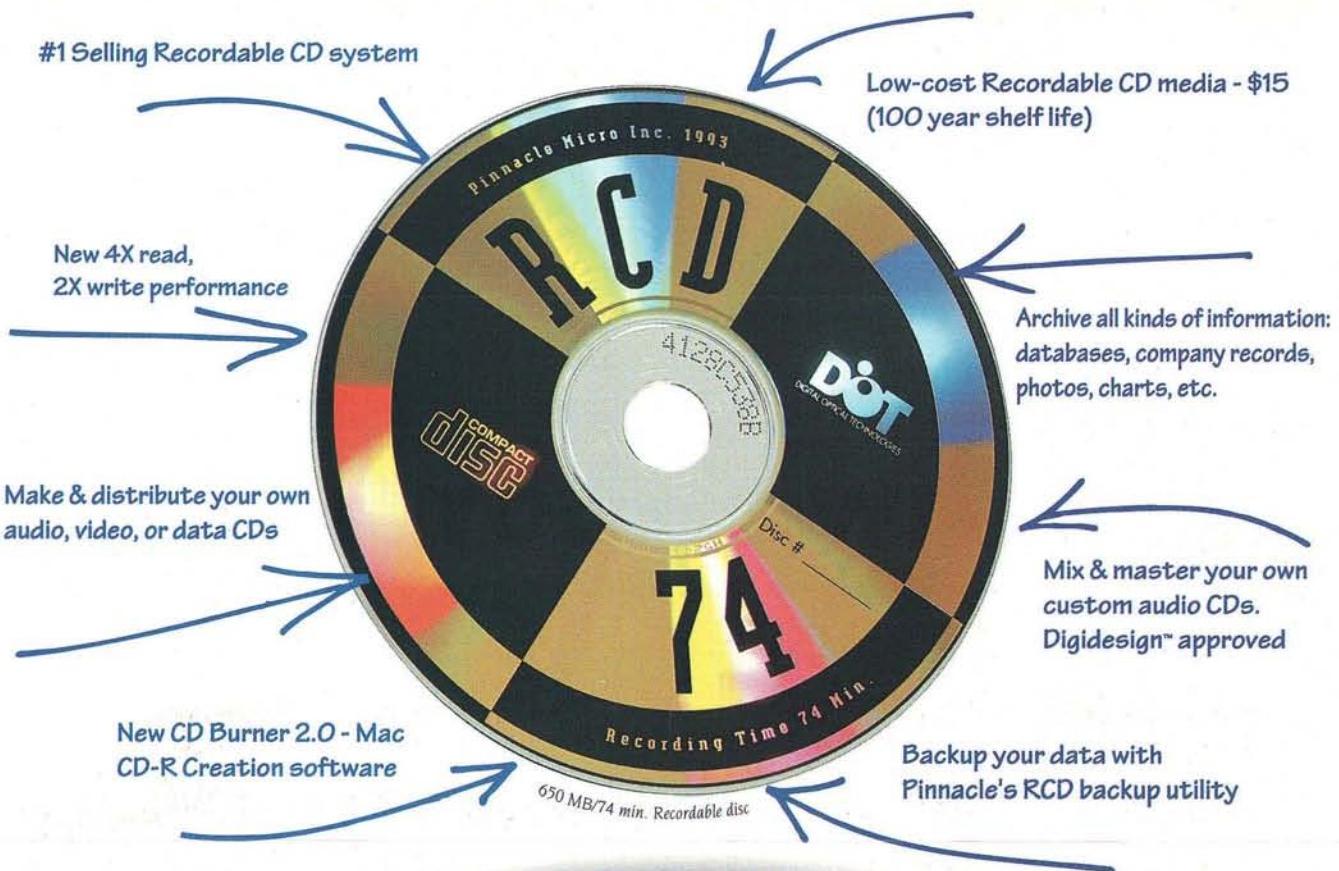
LYNN CHAMBERS

Brewton, Alabama

Kiosk Hall of Shame

THEDAY I GOT THE JANUARY 1996 ISSUE of Macworld, I had just returned from the Rock and Roll Hall of Fame and Museum. The first display of kiosks I encountered, to the left on the ground floor, were sluggish and temperamental; the five on the right simply gave up and shut down a few minutes after we got there. The server would flash error messages, which the software would cover up, and then the application would quit. To continues

MAKE YOUR OWN CDs!



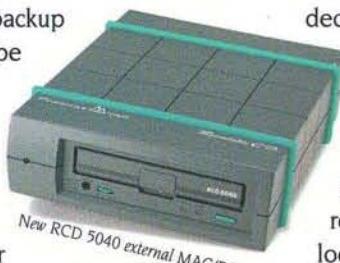
Recordable CD System Only \$1295

Pinnacle's new RCD 5040™ is a 2X CD Recorder and 4X CD-ROM player for only \$1295. As a Recorder, it can create custom data, audio or video CDs up to 650 MB. As a Player it can read thousands of educational, multimedia and music CD-ROMs. Pinnacle's new **CD Burner 2.0** Mac creation software offers the best graphical user interface and the most comprehensive support for the Mac environment. And with Pinnacle's RCD backup utility, CDs can easily replace magnetic tape for better reliability and fast random access to your data. Each CD is only \$15 per disc or 3 cents per megabyte!



Pinnacle CD Burner Mac Creation Software

The RCD 5040 is the easiest way to create your own CD of multimedia titles, interactive games, or even master your own audio CD of your favorite tunes. You can backup



New RCD 5040 external MAC/PC

VALUE-PACKED COMPLETE SYSTEM

- Pinnacle 2X CD Recorder/4X Player
- Extreme Software's UPI™
- Pinnacle RCD Creation Software
- 100 Digital Video Startup Clips
- Pinnacle RCD Backup Utility
- 2 Pieces of Recordable CD Media
- Digidesign™ MasterList CD Approved
- Full One-year Limited Warranty

accounting records, business plans, charts, graphs or confidential information on CDs for decades - safe and secure.

The RCD 5040 system is simply the best way to store, archive, distribute and create information. Best of all, it's now affordable - it's recordable. To order or for a local dealer call: **800.553.7070**



Call to receive your free
Guide To Compact
Disc Recordable (CD-R)

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY

Tel: 714-789-3000 Fax: 714-789-3150

<http://www.pinnaclemicro.com>

All Trademarks and Registered Trademarks of Their Respective Owners.

Circle 115 on reader service card

Coach Pro Calls Great Spelling Plays



Don't get sacked by typos and misspellings. Get Spelling Coach Professional. It works interactively and in batch mode with your favorite e-mail editors, word processors and all leading software programs to signal fumbles in spelling, punctuation and capitalization. Coach calls in corrections from Merriam-Webster's dictionary of over 95,000 words and 93,000 legal, medical and technical terms. Instantly look up definitions for over 85,000 words or consult its BigThesaurus® of 1.4 million combinations of synonyms, antonyms, compared, contrasted and related terms.

Put Spelling Coach Professional on your team for just \$49.95!

DENEBA SOFTWARE (305) 596-5644 <http://www.deneba.com/>

PC Connection 800-998-0014 SKU #1768

LETTERS

make things worse, I got a brief glimpse of Apple's At Ease running underneath. The frame rates were impressive, as you said ("Finally, Rock Computes," *Networks* news, January 1996), but the kiosks themselves broke down far too often.

But it gets worse. After taking two or three hours to browse the museum, I was really looking forward to seeing the Hall of Fame itself on the darkened sixth floor. I climbed the spiral staircase and entered the blackness to face the monochrome, LCD screen of a PC, with "Please wait, ROM BIOS is booting up" on the screen.

The singing rocks in front of the museum captured my attention longer than either of these two attempts at multimedia.

THOMAS MICHAEL BROOKS

via the Internet

The Quadra 630 Question

I AM LOOKING FOR A DOS CARD FOR MY Quadra 630. I checked with Reply and they said Apple provides this solution. I called Apple and was told to check with Reply. What's the deal? Do you know who is making the DOS card? I'd appreciate any information about who is making a DOS card and if it can be purchased.

JACKIE McCARTNEY

via the Internet

You've been led on a wild goose chase, I'm afraid. Neither Apple nor Reply—nor any other third-party vendor for that matter—makes a DOS card for the Quadra 630 because of its LC III-style PDS slot. Owners of a Performa/LC 470-series, 550-series, or 570-series Mac are in the same predicament. Your only option is a software solution like Insignia Solutions' SoftWindows 1.0 (2.0 won't run on 680X0 Macs) or Farallon Computing's Timbuktu.—Ed.

AFTER READING NEW PRODUCTS (JANUARY 1996), I called Apple to get a release date on the Quadra 630-to-Performa 6300 upgrade. The guy I spoke to at Apple said it didn't exist and eluded my attempts to get information on this or any future upgrades. But he did slam *Macworld* for printing the announcement. What's up with these guys? Do you know the truth about this on-again, off-again upgrade?

BOB OLSON

via the Internet

Sometimes customer service is the last to know. The motherboard upgrade to take a Per-

forma/Quadra 630, 5200, and 6200 to a 100MHz PowerPC Performa 6300 was expected to begin shipping in January.—Ed.

Join One, Join All

REGARDING YOUR CONSPICUOUS *Consumer* column in the January 1996 issue, I disagree that users are better off joining a local user group instead of one of the national giants—BMUG and BCS•Mac in particular.

While it's true that the local groups offer more to people in their immediate geographical areas, national ones still offer *all* users information opportunities beyond those any local group could hope to offer. BMUG's excellent BBS is on the Internet; through using it, I've been able to avoid ever calling for commercial technical help. Its help lines are available by phone. It maintains an enormous shareware library, creates its own CD-ROMS, and sells both its own and other computer books at a discount. Finally, its formidable newsletter is a powerful influence on the computer industry.

It's not either/or; both large and local user groups have something to offer anyone.

BETSY RAMBERG

via the Internet

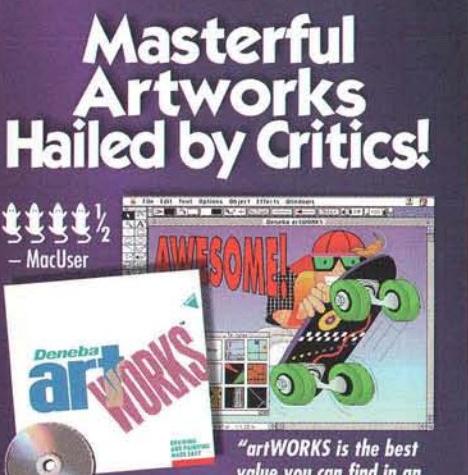
CAPrice

IN RESPONSE TO THE LETTER ADMONISHING Guy Kawasaki for his criticism of those who type E-mail in all caps (*Letters*, January 1996), I offer the following:

dearsir:iamsorrythatyoudisagreewith guykawasaki'sremarksaboutfolkswhotype in all caps. however, your excuse of saving yourself from carpal tunnel syndrome is ludicrous. isavedawholelotofkeystrokesin this message, but it's hard to read!

CHARLES REEVES, JR.

via the Internet



"artWORKS is the best value you can find in an entry-level graphics program" — Mac User

Acclaimed by reviewers and users alike, Deneba artWORKS™ puts crisp object-drawing and vivid 24-bit painting and image editing tools in one handy place. In short, everything you need to touch up family photos, create dazzling dazzling mastheads, school reports, business graphics and more. It's the perfect companion for any color ink jet printer. Use the artWORKS 8,000 Clip Art Image Collection and 500 Fonts to get started on your next work of art — included FREE on CD-ROM.

And for just \$49.95, this masterpiece won't break your bank.

DENEBA SOFTWARE (305) 596-5644 <http://www.deneba.com/>

PC & Mac Connection 800-998-0014 SKU #11055

**FOR A DESIGNER OR ILLUSTRATOR
THE ONLY TOOL MORE IMPORTANT
THAN CANVAS™ 5
IS THE COFFEE MACHINE.**

THE BEST OF

ILLUSTRATOR™

FREEHAND™

QUARKXPRESS™

& PHOTOSHOP™



**SAVE TIME. SAVE A
LITTLE MONEY, TOO.**

Canvas 5 will cost \$599. But if you buy Canvas 3.5 right now, you can get acquainted with the program and get a free upgrade to Canvas 5 when it comes out later this winter. Want more info? Call

800-6-CANVAS EXT 2

We who put words and images on paper for a living have lots of reasons to be profoundly thankful for the new

Canvas 5. Not only does Canvas 5 include all the features that have long made it the program of choice for technical illustrators, it now combines the major functions of Illustrator, FreeHand, QuarkXPress and Photoshop. An awesome array of tools for illustration and page design. Typography and

publishing. Photo design and image editing. Wrapped around a radically simplified, intuitive interface.

It's quick. It's easy. It's complete.

Now, for the first time you can stay with a single program from concept to comp to illustration all the way through to color separations and pre-press.

Canvas 5 has the potential to turn our 16 hour work days into 12 hour days (while making our stuff look better). Excellent. Now maybe we can have a life.*



CANVAS
IT'S WHAT THEY'LL THINK OF NEXT

*Naaahh. © 1995 Deneba Software, 7400 S.W. 87th Avenue, Miami, FL 33173. Phone: (305) 596-5644. Fax: (305) 273-9069. Canvas is a trademark of Deneba Systems, Inc. Illustrator and Photoshop are trademarks of Adobe Systems, Inc. FreeHand is a trademark of Macromedia, Inc. QuarkXPress is a trademark of Quark, Inc. All other trademarks and registered trademarks are the property of their respective holders.

Circle 57 on reader service card

TECH SPECS: • All the standard illustration tools • precision to 0.5 micron • calligraphic pens • path-editing shortcuts include punch, mix & transparency • on-screen rotation & skewing in 0.01° increments • direct selection & editing within groups • automatic object re-blending • centralized ink controls apply

FOR DESIGNERS

colors, gradients, hatches, raster & vector textures to strokes, fills & text • warp objects with 20 pre-defined templates • create standard color tints (10%, 20%, etc.) and custom colorizing tints from any base color • multi-color

ILLUSTRATORS

linear, radial & directional gradients • transform 2D objects into 3D with light source control • calibrated CMYK colors • digital "swatch" book • gamut warning indicator • line joins & end caps • zoom from 3% to 3200% in

ART DIRECTORS

0.01% increments • drag-and-drop between documents • use vector-based objects (including text) as arrowheads • interruptible screen redraws • autotrace scanned images • 38.5° by 38.5° pasteboard • unlimited undo &

IMAGE EDITORS

redo • font sizes from 2 to 720 points in 0.1-point increments • kerning & tracking • drop caps • paragraph-level formatting • indents, margins & column guides • text wraps • column-to-column text flows • left, right,

AND DTP-ERS.

center, decimal & comma tabs • letter & word spacing, hyphenation, last line, ragged width, widow & orphan controls • convert Type-1 & TrueType™ fonts to outlines • automatic font mapping • 100,000-word spell checker • floating toolbox controls • TruMatch™ & PANTONE® Spot or Process colors • color separate any graphic element, including CMYK TIFFs • specify, separate & print spot, process or color tints • color calibration • UCR & GCR • object-level overprinting • moiré elimination • transition effects between presentation slides • floating layers palette • edit bitmap, grayscale, duotone, indexed color, RGB & CMYK TIFF images • 24 alpha channels • feathered-edge selections • quick masks • magic wand • multiple rectangular & elliptical lassos • soft-edged brushes • pressure-sensitive tablet support • clone & rubber stamp • dodge & burn • selectively saturate & desaturate color • smudge, sharpen & blur • color balance, hue, saturation, brightness, contrast & gamma controls • image sharpening, softening, stylizing, distortion & noise filters • live previews • compatible with all Photoshop plug-in filters • TWAIN scanner support • device-independent CIE LAB color space • 2,000 typefaces (both TrueType™ & Type-1) & 20,000 color clipart images on CD-ROM • extensive I/O support including: Adobe™ Illustrator 5.5, Adobe Photoshop 3, EPSF, XPress DCS, TIFF (RGB & CMYK), Kodak Photo CD, MacDraw® Pro, PICT, TARGA, JPEG, IGES, CGM, DXF™, QuickTime™, HPGL, CorelDRAW™ 5, Designer 4, Windows Bitmap & Metafile, WPG, Plain Text, Microsoft™ Word, Rich Text (RTF) & MacWrite® Pro and more.

If

you could print

what you can

imagine
can

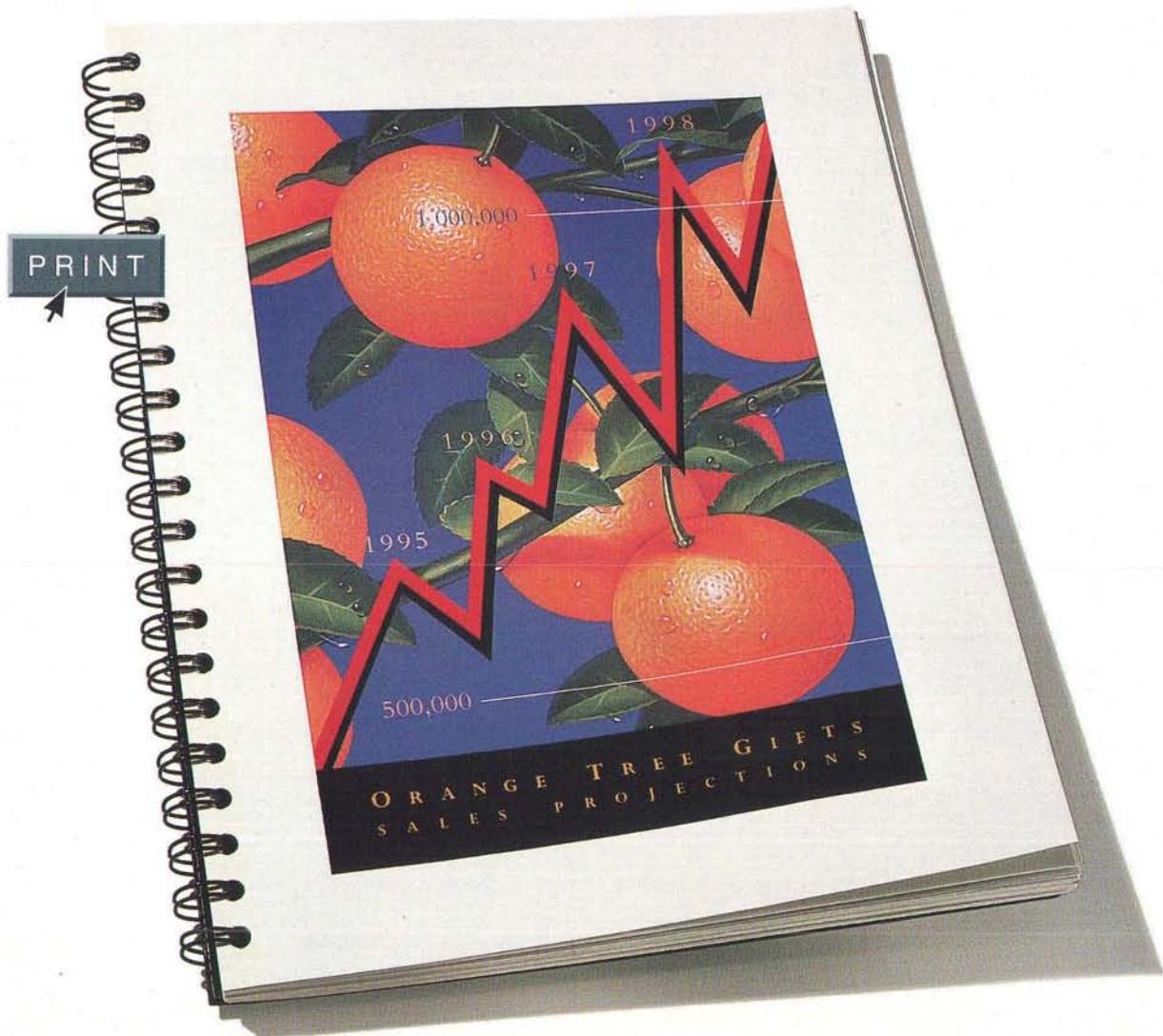
you

imagine.

what you could print?



EPSON COLOR INK JET PRINTERS. *Imagine being able to coax that rainbow chasing child called your imagination out of your brain and onto a document in living, breathing, 720 x 720 dpi, Photo Quality ink jet color. Imagine being able to do it for as little as \$449. Imagine the kind of color that will make people stop what they're doing and look at what you just did. Imagine EPSON Stylus Color. Now stop imagining and call 1-800-BUY-EPSILON x3100, or see <http://www.epson.com>. And give your imagination something to play with.*



The ingredients of a really cool document: any one of the Epson Stylus printers (for as little as \$449), 720 x 720 dpi mode of Photo Quality color, a dash of imagination, and one teaspoon of ave. (Cleanup is a breeze.)

YOU'VE GOT TO SEE IT IN **EPSON** COLOR.[™]

**1996
Macworld
WORLD CLASS AWARD
WINNER**

SHOULD MINICAD 6 BE YOUR CAD SOLUTION?



MACWORLD
EDITOR'S CHOICE

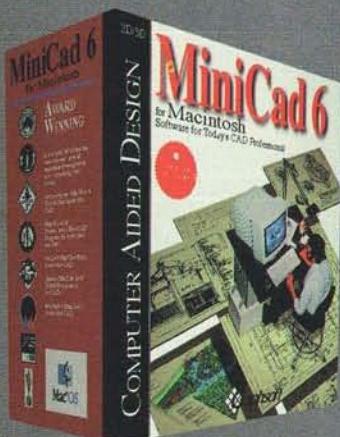
MacWEEK



- ✓ A proven market leader that handles any job; 2D, 3D, cost estimation and presentations
- ✓ A program tailored to your needs. Specialized tools for many design industries: A/E/C, mechanical engineering, landscape, space planning, food service, theater/lighting design, HVAC, and more
- ✓ A program that's easy to use, easy to buy and easy to customize to your specifications
- ✓ A cross platform program for both Macintosh and Windows systems
- ✓ A program from a stable company that stands behind its products with aggressive R&D
- ✓ A program with a RISK-FREE way to try it before you commit

MiniCad 6® ...

THE FULL-FEATURED CAD PROGRAM
with INTEGRATED PROFESSIONAL SOLUTIONS



Diehl Graphsoft, Inc.

Graphsoft®

A NASDAQ TRADED COMPANY
Makers of MimCad 6, Blueprint and
Azimuth for Macintosh. MiniCad 6 for
Windows coming soon!

MACINTOSH WINDOWS

MINICAD 6: A COMPLETE CAD PACKAGE!

MiniCad 6 has just what you're looking for: a complete 2D/3D drafting environment, powerful database and built-in macro language. A QuickTime™ 3D animation tool and QuickDraw™ 3D file support to add sizzle to your presentations. Even digital terrain modeling! All highly organized and very easy to use!

FREE DESIGN AND DRAFTING TOOLKIT™

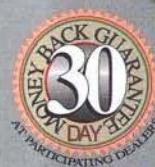
Packed with thousands of symbols, tools, commands, templates, parametrics, formatted reports, worksheets and sample files targeted at specific industries. No extra symbol libraries to buy! These specialized feature sets are powerful, complete and already in MiniCad 6, giving you both design flexibility and targeted industry solutions.

INTERNATIONALLY RECOGNIZED

Now in its 10th year, Graphsoft's MiniCad is the best-selling CAD program for the Macintosh, utilized by design professionals in over 80 countries and 12 languages.

TRY IT RISK-FREE FOR 30 DAYS!

When you buy MiniCad 6 from a participating dealer, you'll get Graphsoft's no-hassle 30 day money back guarantee. You'll also get 18 months of free technical support, a 24 page quarterly newsletter and multi-media CD that provides both Quicktime movies on the operation of each tool and command, and real working sample files from around the world.



For more information please contact Graphsoft at 10270 Old Columbia Road, Columbia MD 21046 **1-800-413-0936** or 410-290-5114
Fax: 410-290-8050, Marketing/Sales: www.graphsoft.com In Canada call Paxar at **1-800-280-0905** For Academic pricing call 1-800-531-3227

QuickTime, QuickDraw and Macintosh are trademarks of Apple Computer. Windows is a trademark of Microsoft. MiniCad and Design and Drafting Toolkit are trademarks of Diehl Graphsoft, Inc.

Circle 46 on reader service card

State of the Mac

by Adrian Mello

Apple Leadership: Chain of Fools

APPLE'S INEPT CHIEFS ARE DISCONNECTED FROM REALITY

PUT AWAY THE BLACK veils. Forget the operatic media pundits predicting Apple's imminent implosion. Apple is a strong business with tremendous assets, and the Mac isn't going to die anytime soon, if ever. Beyond the hype, though, the company must make fundamental changes in the way it does business. Because Apple has not been successful in solving its problems, I've developed an action plan for a new board of directors, a would-be buyer, or even the current leadership.

Apple's real problems have little to do with products or balance sheets; Apple's real problems stem from the epic levels of incompetence and indecision displayed by a core of inept leadership and bloated layers of self-serving managers. The Mac is an unbelievably great computer. Apple is an unbelievably rugged company. Apple's leadership is just plain unbelievable.

Let me make this very clear: Apple must *act*. Empty press releases, feel-good advertisements like those it ran in the *New York Times*, and speeches that repackage old dogma don't solve anything. Such transparent moves are particularly damaging now that Apple's management has once again proven itself so willing to dodge, rather than solve, crucial issues.

Make Up Your Mind

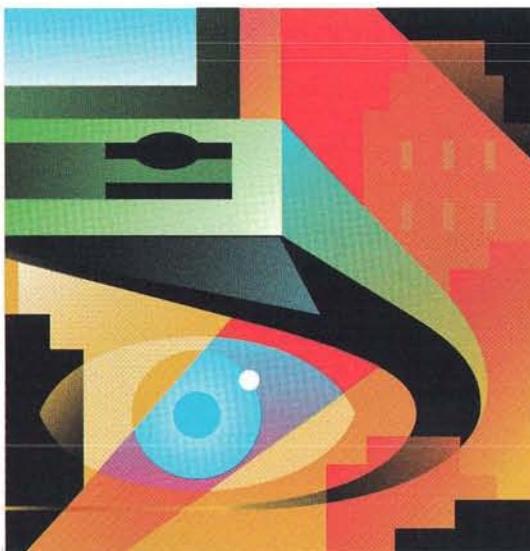
Apple's biggest problem is that it is spread too thin. Years of greed have saddled the company with the dual burden of driving the Mac Operating System forward *and* selling enough computers to maintain the Mac's market share. There's a joke that illustrates Apple's unrealistic ambitions: What company does Apple think it's most like—Microsoft, IBM, or Novell? Answer: All of the above.

Apple must decide what its fundamental business is. The sheer breadth of Apple's endeavors prevents it from focus-

ing its efforts. Apple must develop leadership and discipline: it must both play hard in businesses where it can make money, and learn how and when to stay the course with developing technologies.

Further, by insisting on having all the markets all to itself, Apple has steadily alienated potential strategic partners. Rather than acting like a selfish child, clutching its toys to its breast, Apple must learn to work and play with others.

Apple should maintain a portfolio of businesses, but each discrete unit should be organized and scaled in a way that makes sense. Within Apple, Claris is a good example of this. Claris is treated as a truly separate division; it remains focused on being a successful software



company and is doing quite well. Apple should cut loose projects and divisions that aren't central to the company's core vision, and work toward organizing other key parts of its business—computers, imaging hardware, Newton, and eventually, system software—as separate divisions. The result will be a set of linked enterprises that are better motivated, more effective, more decisive, and more accountable for their decisions.

Build Premium Products

Apple should focus on selling better-outfitted, better-quality Macs and leave low-cost, low-profit Macs to manufacturers set up to fight price wars. When Apple tries to compete solely on price, its margins aren't high enough to cover its research and development costs and remain profitable. However, Apple has shown time and time again that it can make better, more interesting products than other computer makers, and sell those products at a premium.

But Apple cannot just hike up the prices and ignore offering competitive values as it did several years ago. Neither should it abandon the home and education markets. Doing so would only damage the Mac's presence in these markets, which is not in Apple's long-term interests.

Of course, Apple's focusing on premium computers requires that there be a strong clone presence to maintain the Mac market's critical mass. Which leads to . . .

Let Clones Happen

Apple absolutely, without fail, must become serious about licensing the Mac OS. Not licensing the Mac OS early enough is the company's worst strategic mistake of all time, and its continued failure to license broadly only perpetuates this bad situation. Since announcing licensing plans in late 1994, Apple has effectively turned away every major computer company that has shown interest.

Apple's current halfhearted licensing measures are nearly worthless. It will take a number of large-scale computer manufacturers to establish broad support for the Mac platform and grow its market share, and it's unlikely that major com-continues

puter companies will license the Mac OS if they can only make low-cost Macs. They will want to compete with full product lines, enabling them to make better margins on their own premium computers. Apple must show that it is willing to enter into this kind of an agreement with a large-scale manufacturing company.

Leverage Your Assets

Apple's best competitive asset is software expertise, but its revenues are almost

completely dependent on hardware sales. In the long run, Apple needs to make a larger percentage of its revenues off its software business.

As soon as possible, the system software group must be organized as a stand-alone division whose revenue depends solely on licensing the Mac OS. This move will result in several quarters of red ink. But it will make the system software group accountable to the market rather than to other Apple divisions. Eventu-

ally, a strong licensing business will help Apple pay for the continuing development of the Mac OS.

Make Them Understand

In addition to managing its business more pragmatically, Apple must manage public perception more effectively. As much as recent events point to significant problems, it's absurd to think that they mean Apple is going out of business.

Apple is selling record numbers of computers—over a million Power Macs in the last three months of 1995. The Mac is extremely successful and has tremendous customer loyalty in a number of key markets, and Apple has one of the best-recognized brands in the world and virtually no debt. These aren't signs of a company going down the tubes. But the constant funeral preparations by critics are a sign that Apple is doing a poor job managing the public's understanding of the company's state of affairs. The danger is that the constant doomsaying could become a self-fulfilling prophecy. Potential customers hearing only about Apple's troubles may be chased away.

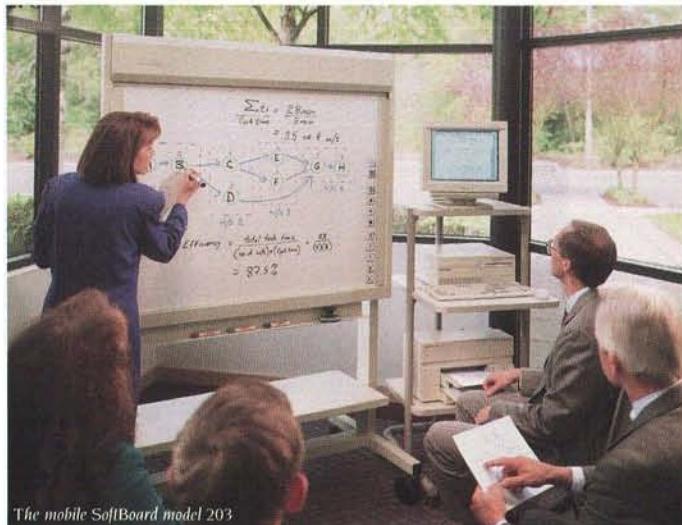
Once Apple defines a clear and sensible strategy, the company really needs someone at the executive level who can help customers, investors, business partners, and employees understand how Apple management will restore order and move forward.

Don't Talk. Act.

The success of the plan I've outlined depends on one more essential element: if Apple's current board and management are to remain at all (and this is a dubious choice at best), they must stop believing their own hype.

These spin doctors have failed miserably in convincing the outside world of the company's health, but they have succeeded horrifically in convincing themselves that their occasional successes have been the results of sound planning and good management, rather than the fruit of rare and unpredictable flashes of competence.

Miracles don't last forever. Apple must outline a plan for a real licensing effort and restructuring its business. It must communicate that plan quickly and clearly. And then Apple must prove that it has the courage of its convictions by eschewing its classic cosmetic restructuring programs in favor of real change. ■



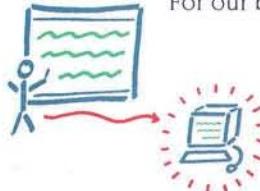
The mobile SoftBoard model 203

Imagine the meeting where you all have the same vision, the same objectives, and the same notes.

SoftBoard®
MICROFIELD

SoftBoard only looks and feels like an ordinary whiteboard. Whatever you create on a SoftBoard® appears instantly on your Macintosh® or Windows®-based PC. Once it's there, you can save it, print it, cut and paste it, e-mail it, fax it, even network it to multiple sites. From personal to conference room sizes, wall or cubicle mount, table top, or mobile, there's a SoftBoard to fit your needs.

For our brochure and information on all our SoftBoard models call today. **1-800-334-4922**



©1995 Microfield Graphics, Inc. All rights reserved. SoftBoard and Microfield Graphics are registered trademarks, and the SoftBoard and Microfield logos are trademarks of Microfield Graphics, Inc. All other trademarks and registered trademarks are the property of their respective owners. All specifications are subject to change without notice.

MICROFIELD
Microfield Graphics, Inc.
9825 SW Sunshine Court
Beaverton, OR 97005
503-626-9393, Fax 503-641-9333
e-mail: sb_info@mfg.com

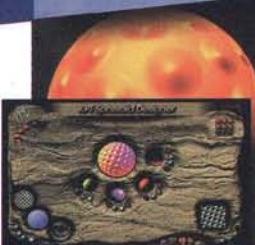


Circle 48 on reader service card

KAI'S POWER Tools 3

UNLOCKS YOUR BRAIN

BEST IN SHOW
MACAWARD
WINNER



Spheroid Designer



Page Curl



Planar Tile



Visual Presets



Interform



Vortex Tile

★★★
Publish

MacUser UNITED KINGDOM

PERFORMS UNDER
WINDOWS® 95



MacWEEK
◆◆◆◆

MacUser
RATED
1

Circle 5 on reader service card

Real Time Imaging Juice!

New Kai's Power Tools 3 takes Photoshop, Painter and your creativity to a completely new level. What sets Kai's Power Tools 3 apart is its ability to solve creative bottlenecks. On a Power Mac, you'll see awesome imaging effects take shape in real time, with Kai's new marvels like KPT Lens f/x™, KPT Spheroid Designer™ and KPT Interform™. There's no better way to maximize your investment in Photoshop and other plug-in compatible programs.

- The choice of world-class digital artists for Web pages, network TV, broadcast award shows, magazine covers, CD-ROM design, annual reports and more.
- Now includes more than 200 new features and improvements.
- New graphic presets, huge real-time previews and advanced interfaces for superior imaging.
- New sphere and texture generators featuring 3D raytracing, animation, negative lighting, genetic blending, infinite zooming and panning through textures and more.
- 36 levels of undo.

Find out more! Call us today.

1.800.472.9025

Mention Dept. KM04

MetaTools™

The Visual Computing Software Company

805.566.6220 fax: 805.566.6367

Contact us in cyberspace:

metasales@aol.com

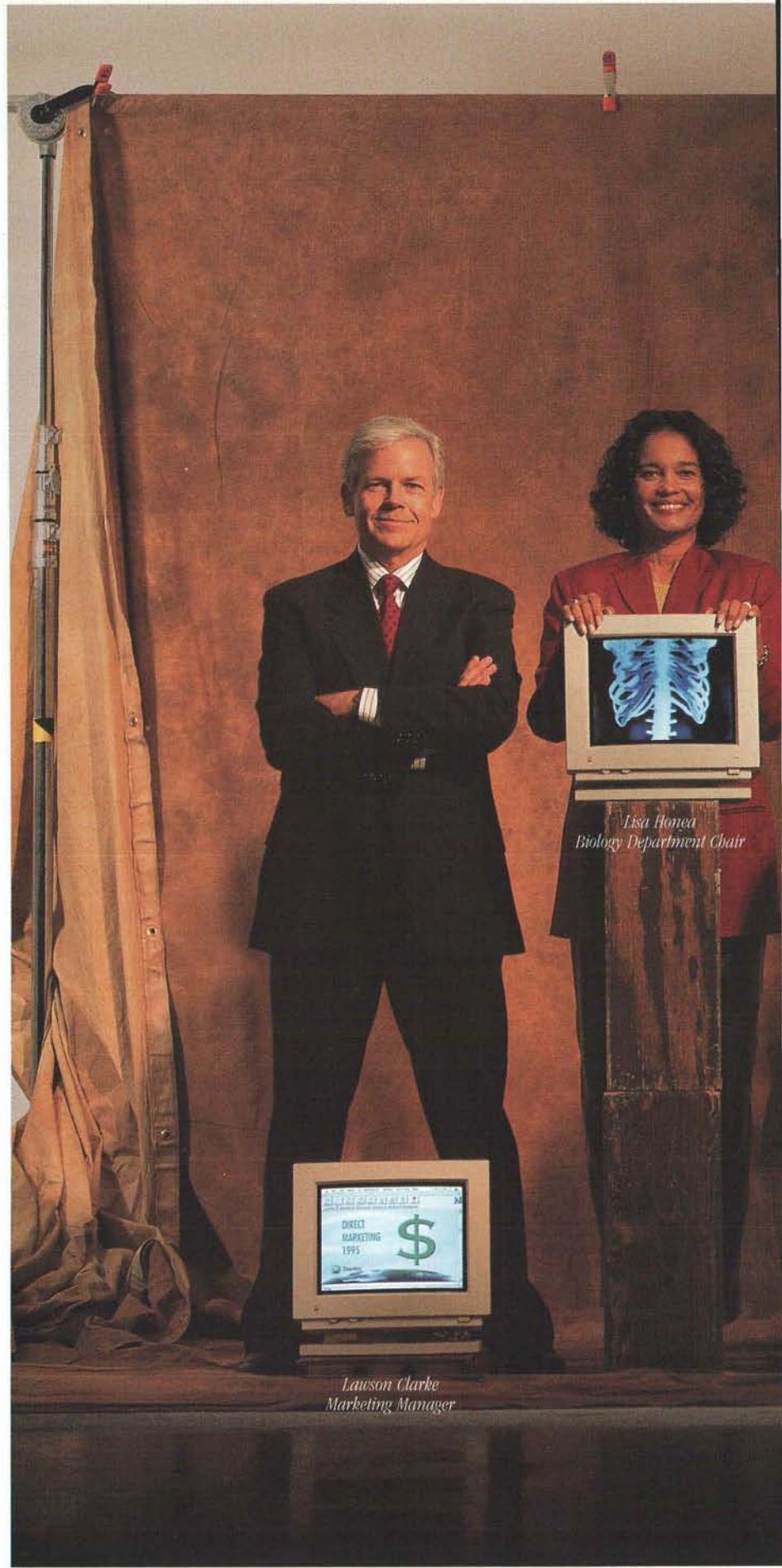
<http://www.metatools.com>

© 1996 MetaTools, Inc. 6303 Carpinteria Ave., Carpinteria, CA 93013. Kai's Power Tools is a registered trademark and KPT Interform, KPT Lens f/x, KPT Spheroid Designer and MetaTools are trademarks of MetaTools, Inc. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Used under license. All other product names are trademarks of their respective owners. Brain image by Impact Images.

MACWORLD
★★★★★/8.3

MACWORLD
★★★★★/8.3
SWEDEN

Looking for a
compelling reason
to set up an
Internet Web site?
How about the
fact that you
don't have to be a
propellerhead
anymore in order
to actually do it?



Lisa Honea
Biology Department Chair

Lawson Clarke
Marketing Manager



*Joe Rosales
Freelance Commercial Artist*



*Debbie Heick
Small Business Owner*



Introducing the Apple Internet Server Solution.

It's called the World Wide Web (WWW). But that doesn't mean you have to get tangled up in it. Not with an Apple® Internet Server working for you. It represents the easiest, most affordable way for people to make their information widely accessible on the Internet. So virtually anybody can now create a WWW site—whether you work in education, publishing, a small business or a *Fortune 500** company. It comes with all the software you need. Install it with a simple click of the mouse. You're up and running in minutes at less than half the cost (not to mention the headaches) of a typical UNIX®-based server. The sample Home Pages can even be customized. So you can build an interactive site full of hyper-linked text, graphics, video and sound. It also comes bundled with Adobe® Acrobat Pro, allowing you to easily convert any PostScript® file into a WWW-ready page. There are three Apple Internet Servers to choose from, all PowerPC™-based. Which means you can be sure you'll have the power necessary to respond to heavy WWW traffic. The power anybody can use.

The power to be your best. **Apple**

Call 800-538-9696, ext. 830, and we'll send you a complete Apple Internet Server information kit. Or visit our WWW site at <http://abs.apple.com>.



The new face of scanning



Scanned at
2700 dpi in 30 seconds
Photo by Phillip Porcella

Brilliant scans. Negative or positive. Under a minute. Under \$2,000.

SprintScan 35 lets you perfect the image yourself, right on your desktop. Just drop in the slide or negative strip, point and click. 30 seconds later you have an image that's as good as your original. • Ideal for 4-color separation output as well as F.P.O. work, the SprintScan 35 captures 10 bits of color (RGB) at a dynamic range up to 3.D. • To get the whole colorful story, call 1-800-816-2611, ext. 965, today.



MW ★★★★

Circle 295 on reader service card

Polaroid
Electronic Imaging Systems

The Desktop Critic

by David Pogue

You, Too, Can Become a Millionaire Overnight

EIGHT BEST-SELLING MAC PRODUCTS THAT DON'T EXIST—YET

IN 1985, RAYMOND LAU, A NEW York teenager, wrote an obscure shareware file-compression program. Its name was StuffIt; now he's rich. In 1990, Lloyd Chambers wrote a little program known as DiskDoubler; today, he's driving a BMW. A programmer I know wrote a couple of shareware programs; now he makes \$28,000 a year in shareware payments alone.

Such stories prove that the American success fable can happen—even today. Invent the right gadget, solve the right problem, fill the right niche, and the world will beat a path to your E-mail address. Look at ATM, or FileMaker, or RAM Doubler. You, too, like Bill Gates, can be worth \$20 billion by age 35.

In fact, I'm going to make it easy for you. I'll give you the ideas. All you have to do is be the first to produce and market these best-sellers-to-be. Selfless altruist that I am, I ask for nothing in return—except a handshake, a mention in the Read Me file, and 10 percent of the gross.

Concatenator Pro

Can somebody explain to me why Apple's CD-ROM drive requires five extensions in your System Folder? Why Microsoft Word 6 needs six extensions just to run? You need three extensions for QuickTime, seven for PowerTalk, eight for QuickDraw GX—and, incredibly, twelve for Open Transport!

Why can't programmers confine their start-up code to a single extension icon? I don't care if it's a 2MB icon—I just don't want to have to turn twelve extensions on or off individually to disable some feature.

That's why Concatenator Pro will be a hit. It's a simple drag-and-drop application: round up as many extension icons as you like, drop them onto the Concatenator Pro icon, and it spews out a single extension icon that incorporates the code of all of the originals. How glorious: you'll

have one icon for CD-ROM, one for file sharing, and so on. Troubleshooting and configuration will be so much easier!

In the unlikely event that you need your original splintered constellation of extensions back, you can drag your concatenated superextension icon onto Concat Pro's icon again—and this time, it spits out the original batch.

Uninstaller Plus

For years, a program called Uninstaller has been a best-seller in the DOS/Windows world. But nobody wrote a Mac version. People said the Mac didn't need it. To remove a program, you just drag it to the Trash—right?



Not anymore. Today's programs deposit their own proprietary junk into your Preferences, Extensions, Control Panels, Startup Items, and other folders. What we need is a quick, simple utility that clears out all that crud when we remove the culprit program.

Carpal Diem 1.0

Experts say that the keys to avoiding repetitive strain injuries (RSIs) are correct posture and regular breaks. But we all know that when you're deep in that hypnotic Mac trance, sucked into some

brainstorm or round of Myst, the real world evaporates. You're supposed to be thinking about ergonomics and rest breaks? Forget it.

Enter Carpal Diem, a small but ingenious control panel. It shows you graphically exactly how rotten your typing habits are, displayed as a timeline (see "Carpal Tunnel Panel")—because what matters isn't how many hours a day you type, but how intensely you type. Better still, the program can display friendly reminders—not just every few minutes, as the shareware program TakeABreak does, but every few thousand keystrokes, which is what we really care about. It can also print out clever little reports that analyze your work habits and make suggestions.

Alas, nobody will write this program. Some user would get wrist pain despite Carpal Diem's advice, and the lawyers would descend like rain.

www.pricedex.com

You see these ads on TV all the time: "We will not be undersold!" "We'll beat any price!" "Pepto-Bismol, \$1.95 this week only!"

Half the time, though, I suspect we're being scammed. The advertiser knows we don't have time to comparison shop for each little \$1.95 item. We're helpless. Shoot, how would anyone know what Pepto-Bismol normally costs?

The PriceDex Web page changes all that. Each week, this service accepts a modem dump from every retail store in your area. Each transmission contains that store's inventory and current price list.

All you have to do is dial in and search for the item you want. Immediately, you're shown a list of local stores that carry it—and a graph of the various prices (see "[www.pricedex](http://www.pricedex.com)").

"Aha," you're thinking, "but what store in its right mind would participate *continues*"



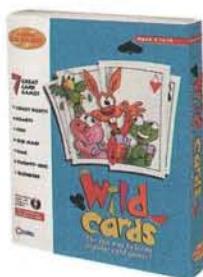
THE WORLD LEADER IN GRAPHICS AND MULTIMEDIA



AGES 4 to 10

Wild Board Games™

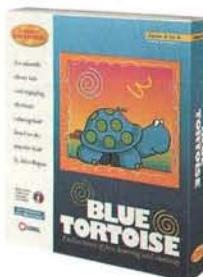
The fun way to learn popular board games
For Macintosh® and Windows® 3.1
\$24.00*



AGES 4 to 10

Wild Cards™

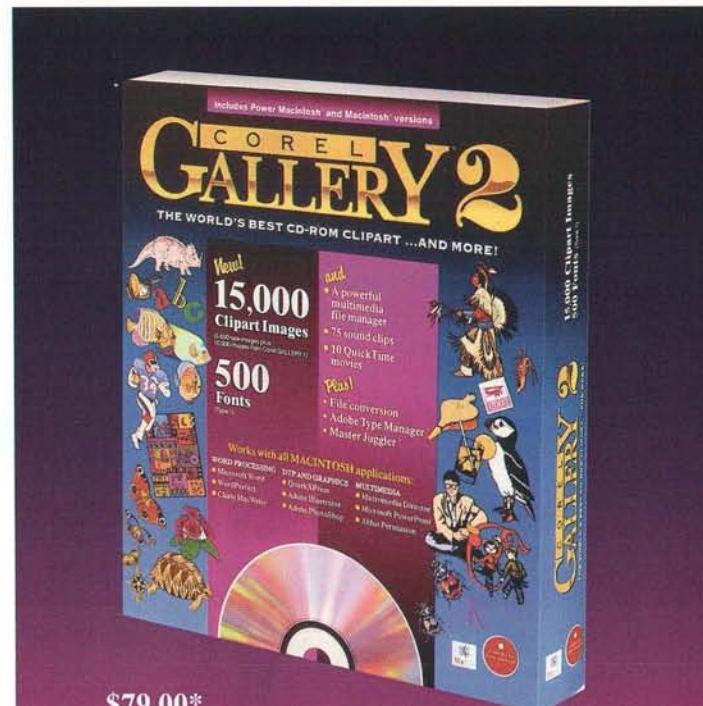
The fun way to learn popular card games
For Macintosh® and Windows® 3.1
\$24.00*



AGES 3 to 6

Blue Tortoise™

Read, color and race to the picnic with Blue Tortoise
For Macintosh® and Windows® 3.1
\$24.00*

**\$79.00***

Corel GALLERY™ 2 for Macintosh includes an "album" containing 15,000 clipart images, 500 fonts, 75 sound clips, 10 QuickTime™ movies, plus a state-of-the-art visual multimedia file manager.



Corel Professional Photos™ on CD-ROM
The world's leading photo CD-ROM collection
Individual titles: **\$24.00*** each

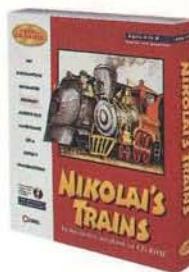
Volume Sets
2,500 photos on 25 CD-ROMs in each set
\$144.00* each

Corel® Stock Photo Library 1 and 2
20,000 royalty free high-resolution photos on 200 CD-ROMs in each library
\$949.00* each



From the makers of CorelDRAW.

Enter the Corel \$3,000,000 World Design Contest and win! (September '95 to July '96)
To receive a faxed copy of the rules and an entry form please call:
1-613-728-0826 ext. 3080, Document # 1125.
To leave a message please call: 1-613-728-0826 ext. 81609.



AGES 4 to 8

Nikolai's Trains™

An interactive journey across the landscape of a child's imagination
For Macintosh® and Windows® 3.1
\$24.00*



ALL AGES

All-Movie Guide™

The ultimate guide to the movies
For Macintosh®, Windows® 95 and Windows® 3.1
\$24.00*



ALL AGES

Bernard of Hollywood's™ Marilyn

A multimedia journey through the life of Marilyn Monroe
For Macintosh® and Windows® 3.1
\$24.00*

PrePRESS DIRECT!
1-800-443-6600
<http://www.prepress.pps.com>

KUR-0142

*USS plus applicable taxes.

Circle 78 on reader service card

COREL®
<http://www.corel.com>
Call now for faxed literature!
1-613-728-0826 ext. 3080

in such a program?" The answer is, of course, all of them. Each would be too paranoid to consider being left out. And the dealers that genuinely do offer good prices would be only too happy for the free advertising.

VideoSpigot

The SuperMac VideoSpigot was a cheap, simple NuBus card that turned your camcorder footage into high-quality QuickTime movies. Customers came by the thousands, gobbling up VideoSpigot cards.

So what did SuperMac do? It discontinued the VideoSpigot.

Today, if you want to make QuickTime movies, you have a handful of unappetizing options. Choice A: Buy a "pro" card in the \$4000 range (like the

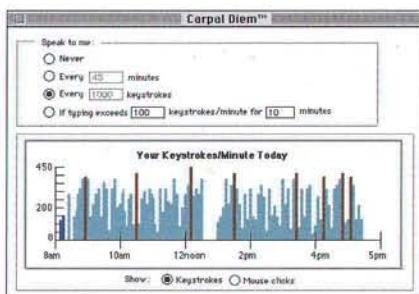
Carpal Diem required a MIDI synthesizer keyboard for playback, since the Mac could produce only four cheesy notes at a time. But then Apple licensed 30 realistic instrument sounds from Roland, the synthesizer maker, and included them with QuickTime 2.0. With these Musical Instruments and the right software, your Mac can be a MIDI synthesizer.

Some notation programs can use Musical Instruments. But the world still waits for a genuine, tape-recorder-like,

music-recording program—a sequencer, as it's known—that's clever enough to use Musical Instruments. Such a program would bring cheap, high-quality music-making to schools worldwide, to PowerBook-porting presenters, and to music hobbyists everywhere.

ExtensionsWorld Magazine

A brand-new Power Mac 8500 comes with 120 extensions—right out of the box. *continues*



Carpal Tunnel Panel The Carpal Diem control panel graphs your keyboard and mouse activity for the day.

Truevision Targa-2000). Choice B: Buy a Quick-Cam for about \$100—and live with its jerky, low-res, black-and-white movies. Choice C: Buy a new Mac that has built-in video inputs. But except for the Power Mac 8500, those Macs make QuickTime movies with a top speed of 15 frames per second—too jittery. Choice D: Get a SpigotII Tape, the VideoSpigot's \$800 descendant. But it, too, has essentially been abandoned—Radius has no plans to make it compatible with QuickTime 2.0 or System 7.5.

Between \$100 and \$800, meanwhile, stretches a market niche screaming to be filled. What's wrong with these companies? Why don't they reintroduce the plain old \$300 Spigot? I say: If you build it, they will digitize.

QuickTime Performer

I'm astounded that nobody has thought of this: a music sequencing program that uses QuickTime 2's Musical Instruments as a synthesizer.

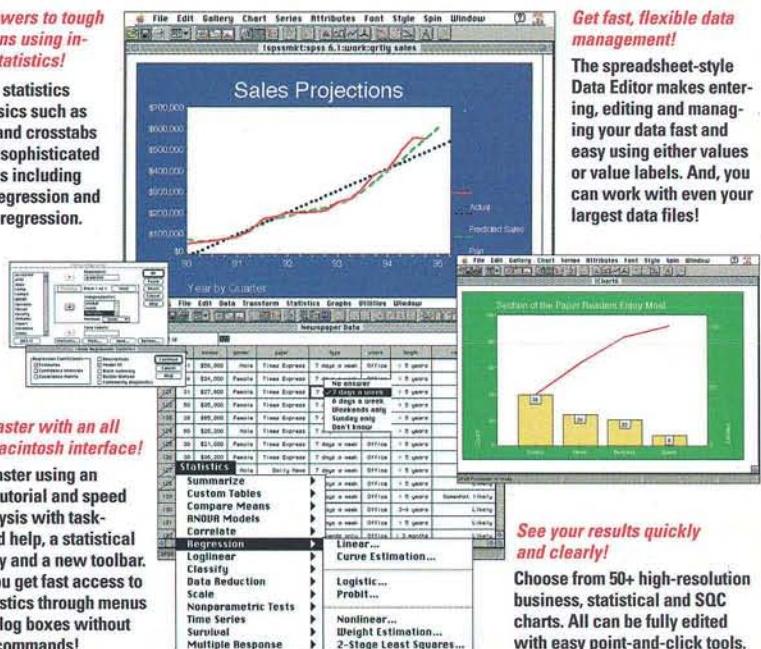
For years, music recording programs like Mark of the Unicorn's Performer and

SPSS 6.1 for the Macintosh® Real Stats. Real Easy.

Accelerated
for Power
Mac!

Get answers to tough
questions using in-depth statistics!

Use 60+ statistics
from basics such as
counts and crosstabs
to more sophisticated
statistics including
factor, regression and
logistic regression.



Work faster with an all new Macintosh interface!

Learn faster using an
online tutorial and speed
up analysis with task-
oriented help, a statistical
glossary and a new toolbar.
Plus, you get fast access to
all statistics through menus
and dialog boxes without
typing commands!

Get fast, flexible data
management!

The spreadsheet-style
Data Editor makes entering,
editing and managing
your data fast and
easy using either values
or value labels. And, you
can work with even your
largest data files!

See your results quickly
and clearly!

Choose from 50+ high-resolution
business, statistical and SQC
charts. All can be fully edited
with easy point-and-click tools.

Use SPSS 6.1 for the Macintosh when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row-and-column math by using the right tool for the job. SPSS enables you to answer tough questions like:

- How satisfied are my customers?
- What will my sales be next quarter?
- What are the patterns in my data?

Survey research

- Explore consumer awareness
- Compare perceptions of products
- Discover preferences by group

Marketing and sales analysis

- Analyze your customer database
- Forecast sales by product and region
- Improve mailing responses

Quality improvement

- Assess process capability
- Reduce nonconformance
- Spot unnatural patterns of variation

Research of all types

- Test hypotheses
- Determine group differences
- Track performance over time

Accelerated for
Power Macintosh



Mac OS

Call 1(800)457-8287

Try SPSS 6.1 for the Macintosh
with our unconditional, 60-day
money-back guarantee.

SPSS
Real Stats. Real Easy.™

Get a great value – order now!

Call 1(800)457-8287

or Fax 1(800)841-0064

or mail to: SPSS Inc., 444 N. Michigan Ave.
Chicago, IL 60611

American Express, Discover, MasterCard,
VISA and I.M.P.A.C. cards accepted

Name	
Title	
Organization	
Address	
City	State
ZIP	Email
Phone ()	Fax ()

A8287

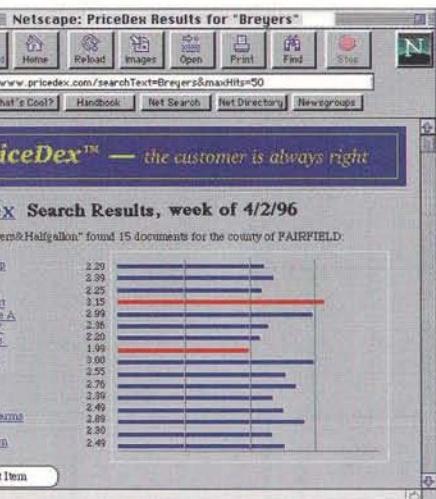
How is the ordinary Macintosh fan supposed to keep them all straight?

Yes, folks, it's *Extensions-World*, the magazine for those who loathe the jungle in every System Folder (IDG, \$24.95 for 12 issues). Sample articles from the premiere issue: "65 Extensions You Can Throw Away Right Now," "The ExtensionsWorld Secret-About-Box Awards," "Exclusive: The Logic behind the System-Enabler Numbering Scheme Revealed," and "A/ROSE: Useful Software, or a Cruel Apple Hoax?"

Each issue also contains a listing of every single extension, enabler, patch, and system update Apple has ever released, complete with information on where to get it, whether to get it, and whether you can throw it away.

PocketBoot

Why is it that the faster the Mac model, the longer it takes to start up? My Power Mac 7100 takes nearly two minutes to



www.pricedex The PriceDex Web page. Each store's name is a Web link to additional store information.

start up, and almost four minutes to recover from a system crash.

That's why the PocketBoot is such a terrific gadget. It looks like a sunglasses case, connects to your SCSI jack, and contains about 2MB of RAM. That's just enough room to store the information your Mac needs to start up: the routines,

extensions, control panels, and so on. With all of this stored on a glorified RAM disk—the PocketBoot—your Mac will start up in about eight seconds. By my calculations, the PocketBoot will save the average Macintosh user about 35 hours each year of sitting there staring at the Mac OS logo.

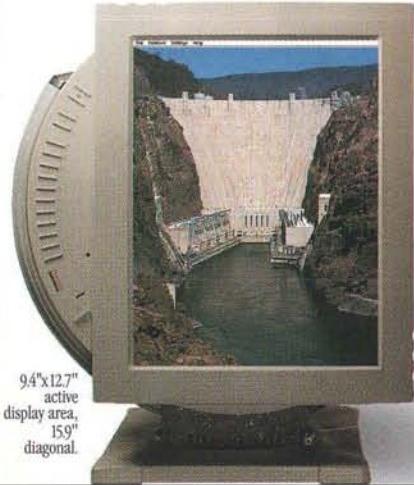
The Upshot

Right there you've got enough great ideas to make eight millionaires—and I haven't even told you about the Modem Port Multiplier, the Word Tool-Bar Eraser, or the Newton Home Entertainment Center Remote Control Kit.

But if you play your cards right, you should be able to follow the path of self-made computer-industry entrepreneurs before you. You'll experience the Five Phases of Ultimate Product Success: glowing reviews, acclaim on the Internet, blockbuster sales, enormous profits, and finally, buyout by Microsoft. ■

Contributing editor DAVID POGUE is the author of *Mac FAQs [Frequently Asked Questions]* (IDG Books Worldwide, 1995)—a book that made him a millionaire overnight, when measured in pesos.

The Monitor that Shows You the Whole Dam Thing.



Portrait Display Lab

The Pivot 1700™ has other 17" color monitors beat from top to bottom. It pivots from horizontal to vertical mode to give you the tallest, sharpest display you can get. Taller, even, than a 21" monitor! And much more affordable. So now you can read a full 8.5"x 11" page without scrolling.

Call us today or, if you prefer, e-mail us at pdlcalif@aol.com for the whole story.

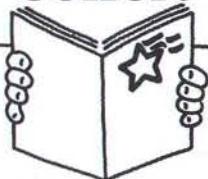


800-858-7744 Ext. 31

<http://www.portrait.com>

Circle 89 on reader service card

This could be a best seller.



But it's free.

You can't buy the Consumer Information Catalog anywhere. But you can get it, free! It's your guide to more than 200 free or low-cost government publications about getting federal benefits, finding jobs, staying healthy, buying a home, educating your children, saving and investing, and more. The Catalog is free. The information is priceless. Write:

**Consumer
Information Center
Department BEST
Pueblo, CO 81009**

How to make a full recovery when disaster strikes.

Disasters don't play favorites. It doesn't matter if you're a huge corporation. Or a one-man band. The result is the same: without Retrospect®, your files can be completely wiped out in a second.

1. How to get disaster insurance for your data.

Data loss will happen to half of us this year: meteors, fire, theft, earthquakes, power surges, hard disk failure, human error—it goes on and on. But with Retrospect and a solid backup strategy, nothing can harm your data.



2. Before you back up.

Figure out what you'll back up to—removable cartridges or a dedicated backup drive. For lots of files, you want a device with the capacity for unattended operation—say DAT, DLT, or an autoloader.

3. How to back up if you're a small company.

Retrospect will show you the best way. The EasyScript™

feature sets up a backup strategy from your answers to a few simple questions, then carries it out automatically to whatever media you select.

4. How to back up if you're a big company.

The answer is Retrospect Remote®, our network backup product. Use a set schedule or the more flexible Backup Server™ which automatically backs up Macs with the oldest backup first—ideal for PowerBooks that appear and disappear off the network. The bottom line: Retrospect Remote covers your network like a blanket.

5. How to laugh in the face of danger.

We're not suggesting standing on the top of the building during a lightning storm. But when disaster strikes, Retrospect can restore whatever you're missing—files from your latest backup,

older files, or the entire hard drive.

Take the next step. There has

to be a reason why more people rely on Retrospect than all the rest combined. Why it

consistently earns the top scores, the best reviews. We have the answers. Call us at 800-982-9981 for our *Understanding Backup* white paper. It would be a disaster not to.



Retrospect
Powerful Backup Software for the Macintosh

dantz To go forward, you must backup.®

Circle 26 on reader service card

©1996 Retrospect and Retrospect Remote are registered trademarks of Dantz Development Corporation. All other trademarks are property of their respective holders. Dantz Development Corporation, 4 Orinda Way, Building C, Orinda, CA 94563. Phone: 510.253.3000. Fax: 510.253.9099. Internet: info@dantz.com, upgrades@dantz.com, www.dantz.com.

NEWS

NEWS FLASH

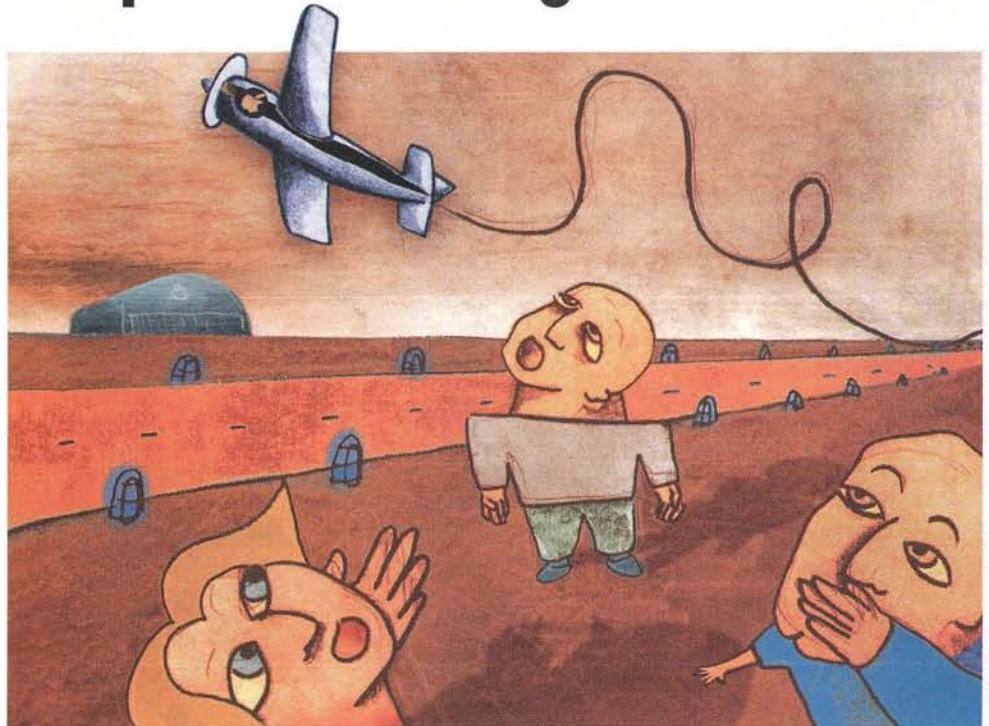
Apple Fires Spindler, Brings in Amelio

A MOVE TO FIX ITS
FLAWS AFTER WEEKS OF
UNCLEAR DIRECTION

by Galen Gruman

Finally, Apple may be able to put its house in order. After weeks of turmoil surrounding a \$69 million loss because of lower-than-expected margins during the Christmas buying season; after months of rumors about possible mergers with and buyouts by companies such as IBM, Sun Microsystems, Sony, Fujitsu, Motorola, and Hewlett-Packard; and after a year of high-level executives' (15 of 45 have left) and key engineers' departing Apple for greener pastures, Apple's board of directors took real action.

On January 31, it fired Apple CEO Michael Spindler and demoted chairman of the board A. C. "Mike" Markkula, Jr., a founder of the 20-year-old company, to vice chairman. The new leader, announced on February 2, is Gilbert Amelio, an Apple board member who is now president, CEO, and chairman, which gives him unprecedent-



JOHN RITTER

ed power at Apple. Amelio had run National Semiconductor, a chip maker that he is credited with returning to profitability during a nearly five-year stint at the top.

The board's action was welcome after three weeks of bland statements about restructuring Apple—something Apple has done once or twice a year for years, with little effect—and refocusing on the

same key markets it has pursued for ten years.

What Went Wrong Apple is the number three personal-computer maker in the United States, with a worldwide market share of about 9.4 percent—and the only non-Windows company to have kept a steady market percentage despite continuing improvements in the Intel-Microsoft PC platform. Between Octo-

ber 1 and December 31 alone, Apple sold more than 1 million Power Macintoshes.

So why the financial shortfall? Because Apple, facing a parts shortage, shifted production to its lower-end Power Macs and Performas during the Christmas buying season. But it turned out that customers wanted higher-powered computers, and Macs like the 7500 were hard to get.

Stuck with unsold Macs, Apple dropped prices, cutting its profit per system from 27 percent a year earlier to 15 percent this fall. That's less than PC clone maker Dell Computer—which doesn't design its operating system or motherboards—made.

Apple's mistake was simple, but it was typical of the company's woes under Spindler's three-year reign. It has consistently miscalculated product development and manufacturing schedules, as well as customer demand.

A \$69 million loss is not a lot of money for a company with \$1.1 billion in reserves; even with an expected \$200 million loss in the fiscal quarter ending March 31, Apple is in no danger of collapse. (Although the company does have about \$2 billion of unsold parts in inventory.) But for industry and financial analysts, the loss was one miscalculation too many.

Apple has also mismanaged its technological development. Groups within the company battle for resources and management approval, rather than help make strategies work.

At the same time, independent Mac developers have complained of Apple's long-standing tendency to promote a new technology—QuickDraw GX, AppleScript, balloon help, PowerTalk, publish and subscribe, Taligent, ScriptX, and now perhaps OpenDoc—and then lose interest. Even when a technology has promise, Apple relies on other companies to find a compelling use, rather than use its AppleSoft division to create an application that will make people want the technology, as Microsoft does with its programs to promote new Windows technologies.

A Renewed Focus Apple says it will take several steps to refocus the company on

MACWORLD EXCLUSIVE
QUARK'S XPOSURE
IS IN REAL TROUBLE, AND
MAY NEVER SHIP. IS
QUARK'S DIVERSIFICATION
EFFORT IN DOUBT?
MACWORLD PRESENTS
AN EXCLUSIVE REPORT
ON PAGE 48.

profitable and forward-looking areas. Before he was fired, Apple CEO Spindler promised "to fundamentally change our business model." That effort is continuing. Among Apple's intended actions:

- Rely on clone makers to serve the home and small-office markets.
- Spend less time on side projects and aim the company's energies on key Mac strengths, such as publishing, the Internet, and education.

However, the company is only beginning to reveal how it will substantively address its management problems and accomplish these goals.

Accomplishing these objectives will mean expanding Apple's clone-licensing effort.



Apple's new CEO, Gilbert Amelio

Ironically, this reverses Apple's actions of 1995, in which it backpedaled on its initial promises to make the Mac OS license widely available. This reliance on clone makers—and Apple will need

continues on page 48



SF CHRONICLE/MICHAEL MACOR

Record crowds at Macworld Expo came to see hundreds of products.

Macworld Expo Delivers Hot Products

WEALTH OF PRODUCTS
DRAWS RECORD CROWD

by James A. Martin

Outside it was cold, but it was piping hot inside. Despite Apple's recent financial woes, the 1996 Macworld Expo in San Francisco boasted nearly 70,000 attendees (a record that marked a 10 percent increase over last year) and more new Mac products introduced than ever before. Here are just a few products shown at Expo, not previewed in previous issues, that caught our editors' eyes.

Fly Your Mac Flight-simulator aficionados demand realism, and Flight Unlimited (\$69.95) from Looking Glass Technologies (617/441-3946) has realism to spare. You'd expect hours of meticulous work on perfecting the flight models of the aerobatic flying machines (including a sailplane), but what you might not expect is the hyperreal treatment given to the external environment.

The Flight Unlimited artists did much of their development in an airplane,

photographing terrain from two different altitudes. They then digitized the photos and mapped them onto a three-dimensional surface, to breathtaking effect. Looking Glass expects Flight Unlimited to be available in March.

The Mercedes of Digital Cameras The screen is the star of the \$1000 QV-30, the new digital camera from Casio Computer (201/361-5400). The QV-30's 2.5-inch, active matrix, antiglare color display affords a better look at your subject (compared with a traditional viewfinder). And you can check out your digital snapshots on the spot, deleting any unwanted images. The camera stores up to 96 JPEG-compressed photos in flash memory, which you can transfer to a Macintosh or dis-

continues

IN THE NEWS

Copland's New Features

40

Making the Web Secure

41

CHRP Prototype Shown

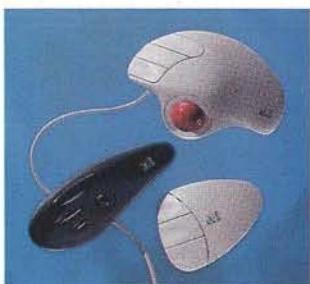
42

Corel Buys WordPerfect

42

Faster Buses to Debut

46



ROBERT PERRY

After a successful run on the PC, Logitech's TrackMan Live, TrackMan Marble, and Mouse-Man Cordless (clockwise from left) make their Mac debut.

play on a television via the included cables.

Point Your Way Logitech (510/795-8500) introduced the \$149 TrackMan Live, a remote, radio-controlled pointer for use up to 30 feet from a Mac; and the \$39 TrackMan Marble, a thumb-operated trackball that promises precise tracking with minimal finger movement. The company also unveiled Mac versions of its \$89 MouseMan Cordless, which transmits trackball movement via radio frequencies rather than a cord.

Visual Spreadsheets Excel is powerful, but it can be a bear to use unless you're a trained professional. Building a spreadsheet with Keep It Simple Spreadsheet (KISS), from Casady & Greene (estimated price \$129; 408/484-9228, csg@casadyg.com), is a simple matter of dragging cells and mathematical operators onto a blank worksheet and then connecting them with lines, as you would connect a flowchart.

Simple relations between numbers are immediately obvious, and for the more advanced user, complicated formulas can be created and reduced to boxes with input and output registers. Casady & Greene also includes step-by-step instructions, as well as templates for common calculations.

Easier Paper Chase The office paper chase just got a little easier to manage, thanks to ePaper, a \$169 full-bodied document-archiving and -management application from Second Glance Software (360/692-9241, info@secondglance.com). The program uses Xerox's TextBridge 3.0 OCR technology to translate scanned documents into editable text; lets you quickly annotate files using electronic rubber stamps, sticky notes, and bookmarks; creates thumbnail information on every document for keyword and other searches; and works with Apple, Epson, Hewlett-Packard, and TWAIN-compatible scanners.

systems

Copland's New Abilities

NEW OS LETS YOU ORGANIZE FILES BY CONTENT

by Galen Gruman

Apple has long promised that the Mac will be an active assistant, helping you wade through your data and make sense of it, not just serving as a repository for it. The next major release of the Macintosh Operating System, code-named Copland and due out in late 1996 or early 1997, will move the Mac a larger step in that direction.

Here are some of the new capabilities you can expect.

View by Content

A new technology tentatively called a view window lets you organize information based on your criteria.

One way to use it that wowed the audience was Copland's ability to find and organize documents based on their content. You enter words you want Copland to find in documents, and it then creates a window that contains all documents with the words, along with a ranking of how closely the document fits your search request. For example, a document that uses the words frequently is judged to be more relevant to your request than a document that contains only one instance of the word. This feature also lets you select a document and have the Mac OS find documents with similar content—no need for you to enter the search text.

Apple will use this pattern-matching technology for more than document-content searches; the technology will also let users view all applications installed on a system, or all files created by a specific user or modified after a certain date.

You can save any view window and have it automatically update with any new or changed documents the next time you open it, thanks to Copland's multithreaded design that allows powerful background processing.

Interface Refinements

Copland will have refinements to the user interface through-



KEVIN CANDLAND

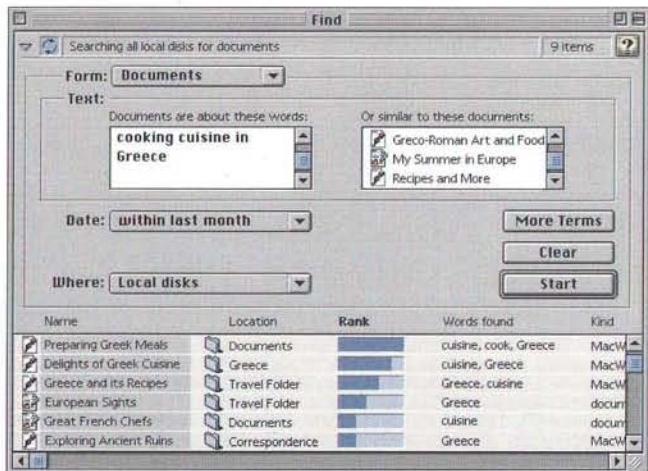
One for Business, One for Pleasure

Personal document scanners have taken desktops by storm, and the \$429 ScanJet 4s, pictured here, is Hewlett-Packard's (415/857-1501) entry. The 200-dpi gray-scale scanner comes with Visioneer's PaperPort 3.0 document-management software.

For less text-intensive jobs, Storm Software's (415/691-6600, sales@stormsoft.com) \$259 EasyPhoto scanner is a quick and easy way to scan in photographs. The 24-bit color scanner handles originals up to 5 by 7 inches, and comes with software for scanning, editing, and displaying your images.—CAMERON CROTTY

out. One that drew audience applause was a subtle change to the Finder's file-view capabilities. Now, when a file name is too long to fit in the list view (view by name), the Finder just displays the first part of the name. If you have a long document name that ends with significant information, such as a revision number or date, you can't see that

Copland, Vito Salvaggio, concedes that today's System Folder is a confusing morass of files, extensions, and preferences that makes system management and troubleshooting difficult. However, he notes that this restructuring may not make it into the first version of Copland. For Apple to meet its end-of-1996 release date, the company may have to pull



The Copland OS will let you find and organize your data by its content.

information. But Copland's Finder shows part of the beginning of the file name and part of the end, so you have enough context to readily tell files apart.

The list view is also customizable, so you can change the order of displayed information (for example, you might want the modification date—rather than System 7.5's default, the file size—to follow the file name). Copland lets you change the width of each piece of file information, as you can adjust most spreadsheets' column widths, and it will even adjust character spacing to squeeze in as much text as it can.

Restructured System Folder

Apple also plans to restructure the System Folder so that you can tell which extensions the system needs and how recent they are. Apple's product-marketing director for

some features and deliver them in 1997 as an upgrade.

Custom Configurations

Salvaggio also demonstrated some previously announced features, including the ability to set up multiple users on one system, each with different preferences and access capabilities. Salvaggio expects individuals who need different settings on their systems to use this feature as well. For example, a notebook user might have one group of settings on the road, when server access is unnecessary, and a different group when plugged into the office network.

You can sort of do this now by using System 7.5's Extensions Manager to save different extension and control-panel settings, but that requires a restart. Under Copland, switching user settings requires only a partial restart, which takes much less time.

Internet WATCH

BY CAMERON CROTTY

The Right Connection

When it comes to serving up content on the Internet, Macs are second only to Unix boxes in popularity, and the latest release from StarNine, now a division of Quarterdeck (510/649-4949, info@starnine.com), should add to the Mac's momentum. The \$1295 WebStar SSL Security Toolkit coexists with any other Web server, and handles clients that attempt a secure connection using Netscape's SSL protocol.



Early this year, StarNine is planning more support for Web-based commerce. Its Business Toolkit will consist of a CGI script and a helper application to help Webmasters move information from HTML forms into processing applications (such as orders databases, credit card-checking software, or online-banking software).

In other news, Intercon (703/709-5500, info@intercon.com) has announced that version 1.1 of its \$495 InterServer Publisher will be Open Transport-native, and that it will ship with Adobe Systems' PageMill HTML authoring software. Intercon also announced a \$295 domain-name server called InterServer DNS.

New Browsing News

Macintosh Net surfers should soon have more browser options.

In the 3-D space, Virtus (919/467-9700, info@virtus.com) is shipping the \$29 Voyager VRML 3-D helper application. You can download a trial version from <http://www.virtus.com>.



And Microsoft (206/882-8080) recently released a beta of its Internet Explorer browser for the Mac, which should ship this spring. You can download a version from <http://www.microsoft.com>. (Microsoft also bought Vermeer Technologies' FrontPage Web-authoring software.)

More Fetching Fetch

For those of you not using your Web browser to download files from FTP servers, version 3.0 of Fetch, by Jim Matthews, is available. New features for the latest version of the Macintosh FTP client include bookmark lists, plus support for System 7.5 drag and drop, multiple connections, and native Open Transport code. The single-user license fee for Fetch is \$25; for more information, browse <http://www.dartmouth.edu/pages/softdev/fetch.html>.



Systems WATCH

BY GALEN GRUMAN

A Step Closer to CHRP

For the first time, Apple has publicly shown the Mac OS running on an IBM system. The IBM system—based on the PowerPC platform once known as CHRP and codeveloped by Apple, IBM, and Motorola—ran System 7.5 and several programs, including Adobe Photoshop 3.05 and Microsoft Excel 5.0. Apple presented the system at the Demo 96 conference in late January. According to sources, engineers at Apple have resisted working on the CHRP project, and the demonstration was meant to make Apple management's commitment to the new platform clear.

First Japanese Mac Clone

Now that it has shipped its PowerWave and PowerCurve Mac clones, Power Computing is readying to enter the Japanese Mac market, which is Apple's second-largest market. Power Computing has opened an office in Tokyo and plans to launch a Japanese Mac-clone line later this year.

StarGate's Takeoff Delayed

Power Computing (512/258-1350) has delayed the release of its \$249 StarGate riser card, which adds two NuBus slots to the company's PCI-based PowerWave and PowerCurve Mac clones. The company found some incompatibilities with some NuBus cards that slowed performance. Affected cards include the Radius Thunder IV GX. A fixed card is due out about the time you read this. Similarly, Second Wave's (512/329-9283) XPanse PN NuBus-to-PCI adapters do not well work with some NuBus cards, including FWB's SCSI accelerators.

The Elephant-Size Fix

To help PowerBook 5300, 2300, and 190 owners deal with a variety of problems, Apple (408/996-1010) has released a software patch—a 14-disk replacement of System 7.5.2 available for downloading from Apple's Internet site (<http://www.support.apple.com>). Fortunately, you really only need to download disks 1, 8, 10, 11, 12, 13, and 14; the others are unchanged. You can get a set of disks from Apple's toll-free support line, 800/767-2775. The fix is also meant for people who buy Apple's PowerPC upgrade card for the PowerBook 500's.



Look under Version in Get Info to make sure your PowerPC PowerBook's Finder is at version 7.5.4.

publishing

Color Central Image Server

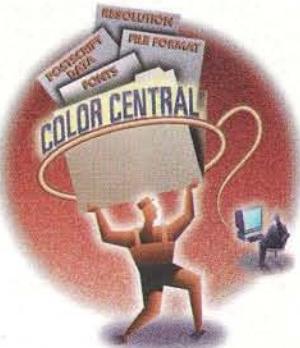
SPEEDS OUTPUT AND SIMPLIFIES JOB TRACKING

by James A. Martin

Faster output speeds and improved job tracking are among the new features of Color Central 3.0, the OPI 2.0-based image-server software from Luminous (206/628-4534). Luminous is the newly formed spin-off company of Adobe Systems' prepress division.

Color Central 3.0 lets prepress houses and others use a Microsoft Windows NT-based print server, with Macs as their networked clients. NT supports multitasking over multiple CPUs.

The client/server architecture also lets Color Central



send job-tracking information to client Macs, freeing the server to focus on handling print jobs. Before, users had to read the print job's status off the server's monitor.

The \$3995 Color Central 3.0 is expected to ship in April.

NEWS FLASH

Corel Buys WordPerfect

MAC VERSION STILL ALIVE; OTHER PORTS POSSIBLE

by Cameron Crotty

Just a few years after buying WordPerfect Corporation in hopes of assembling a company that could compete with Microsoft in the operating systems and applications businesses, Novell has sold the WordPerfect division to Corel, a developer best known for its Windows illustration software.

The January 31 sale completes Novell's divestiture of its previous acquisitions; earlier, Novell sold its UnixWare business and ended its Digital Research DOS business.

The future of Mac WordPerfect is unclear. According to sources, the company has gutted the WordPerfect team

from about 16 employees last summer to 2 this winter.

But Glen Mella, previously head of the WordPerfect Business Group, tells *Macworld* that "we're not going to leave [the staffing level] there. The right people that know this product will be involved with us."

At a press conference, Corel CEO Michael Cowpland was positive but unspecific about Corel's plans for the WordPerfect applications on the Macintosh, and hinted at increased efforts to bring Corel's other products into the Mac space. One Corel employee says Corel will port the CorelDraw illustration software to the Mac this June.

What if Michelangelo had been confined to an 8½ by 11 inch space?

†Suggested U.S. list price. *Pantone, Inc.'s check-standard trademark for color. Adobe and PostScript are trademarks of Adobe Systems Inc. which may be registered in certain jurisdictions. **In Canada, call 1-800-387-3867, Ext. 9456. © 1995 Hewlett-Packard PE12573



The HP DesignJet 755CM
large-format printer

Let's face it. Life is bigger than 8½ by 11 inches. With an HP DesignJet 755CM printer, you can now print beautiful, near-photo-quality output at sizes up to 3' by 9'. Right in your office. With the creative freedom to print whatever you want, whenever you want. And at just \$11,995,[†] the HP DesignJet 755CM comes fully equipped with improved PANTONE®*-licensed colors, True Adobe™ PostScriptTM Level 2 software,

68 MB of memory, and a one year on-site warranty. A variety of paper stocks are supported, including glossy. For an output sample or to see a demo, call 1-800-354-7622, Ext. 9933.^{**}

hp HEWLETT®
PACKARD

Circle 11 on reader service card

To make sure they're highly-skilled,
we make our employees
pass an intense screening process.

(So intense it usually tells us more about those who fail.)



MacTemps is the only staffing agency that won't send you just anybody off the street. Because not everybody has the skills to pass our tests. We know Macintosh technology better than any other staffing agency. So we can thoroughly test our employees to make sure they have the skills you're looking for. Design and production on Quark XPress® and Photoshop™. Presentation graphics using PowerPoint® and Persuasion®. Multimedia using Director® and Premiere™. Not

to mention help desk and technical support. Our employees know it all. If they didn't, we wouldn't offer a 110% money-back guarantee. For a highly-skilled temporary or permanent employee, call 1-800-MACTEMPS. And we'll send you the ones who pass.

Offices in 24 U.S. cities,
London, Paris, and Melbourne.

MacTemps
1-800-MACTEMPS®

For some up-to-date job listings, visit our web site at <http://www.mactemps.com>.

Circle 60 on reader service card

multimedia

The Next-Generation CD-ROM

WILL TODAY'S DRIVES SURVIVE DVD?

by James A. Martin

For several years, deciding what CD-ROM drive to buy was about as simple as it gets: Double-speed or quad-speed? Internal or external?

But this year, consumers are suddenly facing more hardware choices than ever before. By this spring, the first 8x CD-ROM drives for the Mac will begin competing with drives offering 4x and 6x transfer rates. And by year's end, drives based on an entirely new, high-capacity CD technology called DVD (for Digital Versatile Disc) are expected to show up on store shelves.

Meanwhile, the promise of hardware speed enhancements is tempered by the fact that the vast majority of CD-ROM software developers are still optimizing their applications to take advantage of the now-obsolete double-speed CD-ROM drives' data-transfer rate.

From 4x to 8x

Quad-speed drives offer data-transfer rates of 600 KBps—four times as fast as the first generation of CD-ROM drives, hence their name. Currently, 4x drives dominate the market and sell in stores for \$200 to \$350.

A few vendors are now selling 6x drives (with transfer rates of 900 KBps) for \$400 to \$600. Meanwhile, NEC Technologies says it will be among the first to sell an 8x CD-ROM drive for the Macintosh. Although details weren't firm at press time, NEC's 8x drive will be available at a street price of \$450 to \$500 by midyear.



Fast-Forward to DVD

Late this year, several CD-ROM drive developers—including Toshiba, Sony, Matsushita, and NEC—are expected to release the first DVD drives. DVDs have the same physical format as today's CDs, yet DVDs will store up to 4.7GB of data (compared with today's CD limit of 660MB). The increased capacity will let developers add copious amounts of full-motion, full-frame video (using MPEG-2 compression), 3-D and virtual-reality animations, and other multimedia.

The first DVD drives are expected to be pricey, between \$500 and \$700. Although the hardware is still in development, DVD drives are expected to have transfer rates that exceed the 8x CD-ROM drives' 1.2GB per second. And while DVD drives will be able to play existing CD-ROM software, none of the current CD-ROM drives will be able to play DVDs.

But Where's the Software?

For now, most software developers are keeping their sights on the largest base of users—those with double-speed CD-ROM drives.

In addition, software companies aren't scrambling to keep up with the hardware because, for most applications,

the 4x to 8x speed enhancements are "mostly incremental," according to Ted Pine, chairman of InfoTech, a multimedia research firm.

While developers say they're not focusing on optimizing software for the 4x, 6x, and 8x drives, the coming DVD format is another story. "That's where the real excitement in the industry is," says Stuart Burden, executive director of development for Compton's New Media. But Burden and other developers contacted wouldn't comment on any specific plans for DVD drives.

So What to Buy Today?

The majority of software initially available for DVD drives is likely to be large databases, such as telephone

directories and mapping programs, along with a few games. It will be at least late 1997—some analysts guess 1998 and later—before DVD drives drop significantly in price and offer a variety of eye-popping, next-generation software titles.

As a result, a 4x to 8x CD-ROM drive will still be a viable purchase for the next 18 months or more, analysts agree. If you frequently download large chunks of data from a CD, you should buy the fastest CD-ROM drive possible, suggests Kathy Klotz, a multimedia analyst for market-research firm Dataquest. Otherwise, buy a top-rated drive at the best price, she says, and don't worry about the 4x, 6x, and 8x speeds.

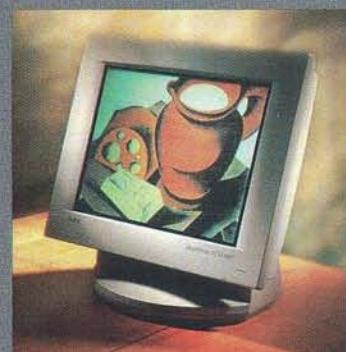
Desktop LCD Monitors Get Cheaper

BUT CAN THEY COMPETE WITH CRTS?

Visionaries have long predicted that LCD panels would replace CRT monitors as the standard display device, but the high cost of active matrix screens in monitor sizes—thousands of dollars each—has kept that no more than a vision. Now, NEC Technologies (708/860-9500) has brought it a little closer to reality with the \$4000 12-inch MultiSync LCD200 and the \$6000 13-inch MultiSync LCD300. While hardly competitive with the \$300 to \$500 for a 14-inch CRT, these prices are a third of what NEC charged for last year's comparable 13-inch LCD1280 LCD display. I evaluated a prototype unit for its visual quality, since LCD panels historically don't have the clarity that CRT monitors do. The result?

The screen is big, bright, clean, and crisp. I did notice the slight pixelation that all LCD panels seem to have compared with a CRT, and fluorescent lighting can make color backgrounds lighter. But it is clear that an LCD panel can be an effective replacement for a CRT.

—GALEN GRUMAN



NEC'S LCD DISPLAYS LOOK IMPRESSIVE AND NOW COST MUCH LESS.

JOHN BICK

Special Report

New Mac Buses on the Horizon

BY CARY LU

With the next major revision to the Macintosh platform due in early 1997, based on the joint IBM/Apple design recently rechristened the PowerPC Platform, Apple is poised to change some of the Mac's basic peripheral-connection technologies.

One technology area is Firewire, a high-speed peripheral bus that might replace SCSI. The other technology area covers low-speed ports such as ADB and serial ports. Here, Apple's decision makers are wrestling over adopting Intel's Universal Serial Bus (better known as USB, and soon to be the new PC standard for serial ports) or sticking with the GeoPort serial design and the ADB design.

The Firewire Connection

The first in a new generation of high-speed devices using IEEE 1394—the fast serial-

port protocol pioneered by Apple as Firewire—are now appearing for digital video; expect to see 1394 become the standard for scanners, digital cameras, music, and storage devices within three years.

What Firewire Offers
IEEE 1394 starts pretty much where the two slower protocols, GeoPort and USB, leave off, taking on high-speed data transfer. Unlike SCSI and USB—both of which support only a single host computer—1394 supports multiple computers with up to 63 connected devices on a branching chain. Depending on the spe-

cific hardware, 1394 currently runs at one of three speeds—100, 200, or 400 Mbps (800 and 1600 Mbps are expected in 1997). When two or more devices on the chain are communicating with each other, they automatically adjust to a mutually supported speed.

Other advantages of 1394 include the ability to plug in devices without powering down the computer, and the elimination of device-ID conflicts because devices assign themselves addresses on the fly. Containing only six wires, the 1394 cable is much thinner, more flexible, and cheaper than a SCSI cable. And because 1394 cables can supply up to 60 watts of power, devices can operate without a separate power cord.

Who Has Firewire on Tap?
The first products with 1394 are already on the market: two consumer digital camcorders from Sony, which use 100-

Mbps 1394 to send images in a new compressed digital-video format called DVC. Combined with 1394, DVC will quickly replace motion JPEG as the compression standard for video editing. DVC removes the last vestige of analog signals in video production; its image quality surpasses that of the laser-video disc and professional Betacam formats.

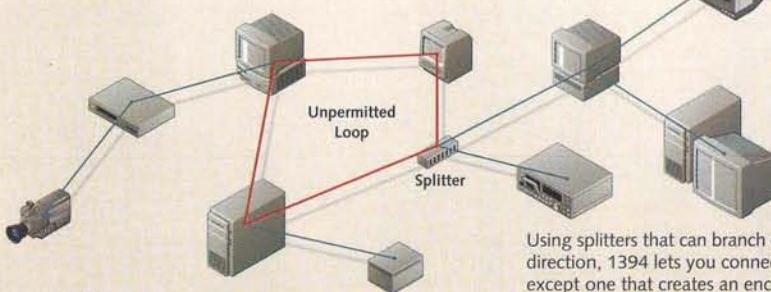
High-end electronic musical instruments are adopting 1394 as a replacement for MIDI; a 1394 connection supports multiple streams of full digital audio along with MIDI-style control codes.

For publishing, 1394 will help make lower-cost, higher-performance scanners and digital cameras possible.

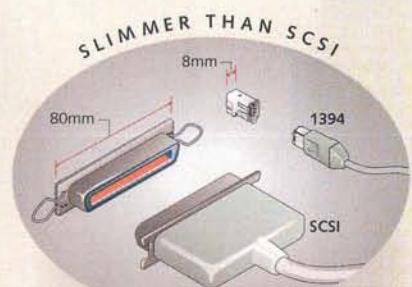
In time, 1394 will also replace SCSI on storage devices, such as hard drives and optical drives. And high-end television sets may someday come with a 1394 port and

Firewire (1394): Faster and More Flexible Than SCSI

Already the standard for digital video, Firewire, now known as 1394, supports up to 63 high-speed devices you can connect in a treelike scheme, as opposed to SCSI's linear chain. Unlike the bulky and unreliable 25- or 50-wire SCSI cables, the compact 1394 cables and connectors contain just 6 wires. Other advantages of 1394: you can plug in and unplug devices with the power on, and you may not need a separate power cable because the 1394 cable can carry power for hard drives and other low-power accessories.



Using splitters that can branch cables at any point and in any direction, 1394 lets you connect devices in any combination except one that creates an enclosed loop (shown in red).



Firewire connectors are about a tenth the width of SCSI connectors and Firewire cables are about half the diameter of SCSI cables.

DVC decompression built in. A computer monitor could also connect via 1394, although a conventional monitor connection will be cheaper for some time to come.

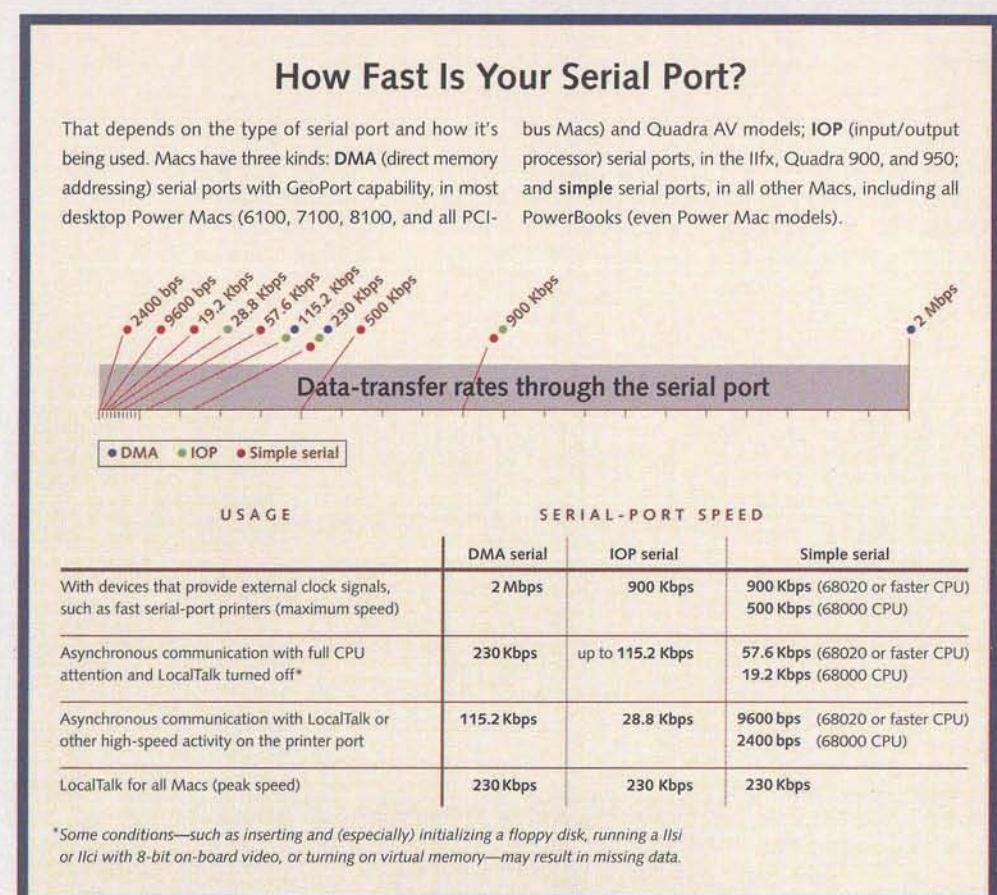
In 1996, PCI cards with 1394 will be available for Power Macs from SCSI-adapter companies, such as Adaptec (408/945-8600). By the end of 1996 or early 1997, expect to see Macs with 1394 built in—just as SCSI is now. Low-end computers will have a single 1394 port with an internal and external connector, while high-end machines will have multiple 1394 ports.

Revisiting the Serial and ADB Ports

Deciding where to plug in low-speed devices—such as modems, printers, and pointing devices—has always been a simple matter for Macintosh users. But the limitations of ADB and serial ports could force Apple to change the Mac's low-speed port technology significantly by 1998.

Limits of the Past With a maximum data rate of 10 Kbps, an ADB port can keep up with a mouse and keyboard, but not with a graphics tablet. Older Macs' serial ports run at speeds between 57 and 900 Kbps, while desktop Power Macs and recent Mac AV models have a GeoPort, an improved serial port that runs at up to 2 Mbps, fast enough to handle a T1 digital phone line.

GeoPort and serial-port speeds vary depending on the Mac model, the specific serial devices connected, and whether both ports are working simultaneously (see the chart "How Fast Is Your Serial Port?"). But a GeoPort or serial port can connect to only one device at a time, and no Mac has more than two such ports. At least one PCI card with additional GeoPorts should be available from a



third party by midyear. Apple anticipates mostly telephony products for the GeoPort, including devices that handle both voice and data.

The only GeoPort-specific hardware currently available, Apple's GeoPort Telecom Adapter, is limited to 14.4-Kbps modem connections. However, several companies have announced GeoPort support, including IBM (for its PCs) and AT&T (in telephony products). But overall, the GeoPort seems like a nice technology that can't do very much.

Although Apple has moved toward industry-standard hardware interfaces, such as the PCI bus, it could hardly be expected to adopt the PC's standard low-speed serial ports, since they perform even more poorly than a Mac's.

Will Apple Adopt Another Intel Bus? But now Intel wants to replace the standard PC ser-

ial ports with its Universal Serial Bus. USB has a peak rate of 12 Mbps, with usable throughput of 6 to 8 Mbps—fast enough for CD audio, which can travel with other digital information. Like Apple's ADB, USB supports multiple daisy-chained devices. It was developed as a kind of third-generation ADB (the second generation was Access.bus, a failed standard once promoted by Philips, which is still used in some monitors from NEC Technologies and Sony).

Intel plans to put USB on its Pentium and Pentium Pro motherboards. However, some obstacles may slow its adoption. Intel and Microsoft have different implementations of USB, but both methods can coexist without major conflict. And USB is more expensive to build into computers than either ADB or GeoPort, although the added

cost for USB accessories should be low once high-volume production begins. But USB accessories will initially cost more than the inexpensive accessories currently dominating the PC market.

When Intel was developing USB, it offered to give Apple advance information—if Apple renounced GeoPort. Apple passed but says it may adopt USB if and when PC accessories with USB come out in quantity at prices significantly lower than Mac accessories' prices, which isn't likely until 1997. Several major accessory makers are investing heavily in USB development.

For now, there's no reason to put off buying an ADB, GeoPort, or serial-port device, but if you contemplate getting a big, expensive graphics tablet or an ISDN adapter within the next year or so, you might want to consider a USB version.

Will Quark Sink or Swim?

DELAYS PLAGUE XPOSURE, BUT IMMEDIA SHOULD SHIP MIDYEAR

by Cathy Abes

Not content with QuarkXPress's secure position at the top of the page-layout heap, Quark decided to broaden its scope by branching into multimedia with the QuarkImmedia XTension (previously known by the code name Orion) and into image editing with QuarkXposure (see *Graphics news*, May 1995). Although both products were scheduled to ship by summer 1995, neither has arrived.

Do the delays reflect trouble at Quark, or a series of unrelated coincidences? Sources close to Quark allege that shifting priorities, high turnover (for example, only one product manager at Quark has held the position for more than two years), and low morale are hurting the company's efforts. Quark's president, Fred Ebrahimi, disagrees; he claims a record profit in 1995 and a 25 percent increase in worldwide XPress sales, as well as low turnover in research, programming, and product management. He also cites a new commitment to improved customer support. Sources paint a darker picture of a Quark stressed by inconsistent management and shifting priorities.

XPosure: Grim Prognosis

Groomed by Quark as a Photoshop killer and first shown in prototype form over a year ago, QuarkXposure generated much excitement among artists and publishers.

But Xposure has yet to ship, or even go into beta testing. A joint project between Quark and JVC, a Japanese company that has not previously brought a Mac product to market, Xposure faces serious technical problems, says Ebrahimi, who admitted that "it's not in a condition I would consider shipping." While hoping for a solution, Ebrahimi says, "We didn't do the R&D work. We have no control over the [core] technology." He said Quark will decide "in the next few months" if Xposure can be fixed to Quark's satisfaction and that the product has "about a 50-50 chance" of survival.

The picture actually looks much bleaker, according to knowledgeable sources who say that conflicts between the two companies over JVC's refusal to correct serious performance and interface problems have effectively derailed the project. (JVC would not comment.) As a result, Quark's Xposure design team has been reduced to a skeleton crew, these sources say. Ebrahimi would not comment on staffing.

Sources say that an agreement letting Quark use PixelCraft's color-separation architecture in Xposure also fell through late last year. Neither Quark nor PixelCraft would comment on this allegation.

Immedia: Should Ship This Year Quark's multimedia XTension, Immedia, is in much better shape. The company says Immedia will be out by summer; beta testing is expected to begin by late February.

Immedia is taking a different approach to multimedia publishing than programs like Adobe's PageMill, eschewing Internet standards such as HTML in favor of Quark's own browser, which would work as a stand-alone viewer or as a plugin for Web browsers like Netscape Navigator. Ebrahimi says Immedia is designed to deliver documents that have layout, typography, video, and sound, and that HTML and other Web-publishing technologies simply can't produce such design-oriented documents.



XPress: Not Top Priority The status of XPress 4.0 is less clear. Last spring, Quark chairman Tim Gill described an initial features list at the QuarkXPress Conference and said that 4.0 would ship toward the end of 1995 (see *Graphics news*, August 1995). Ebrahimi says Quark has no schedule for XPress 4.0. He would like it to ship this year, but "it's fine with us if it ships next year."

That's because the priority project at Quark right now is Immedia, which he believes will broaden Quark's business.

A Future Assured? Quark clearly feels its superior technology will maintain its edge over competitors in the long haul. But can a one-product company turn into a successful multiproduct entity, given Quark's reputation for being difficult and its dependence on one man—Gill—as the visionary and primary architect of its key technologies?

"APPLE'S NEW CHIEF"

continued from page 39

more licensees than Power Computing and Umax—to serve the low-profit markets may spell an end to or significant reduction in the Performa line.

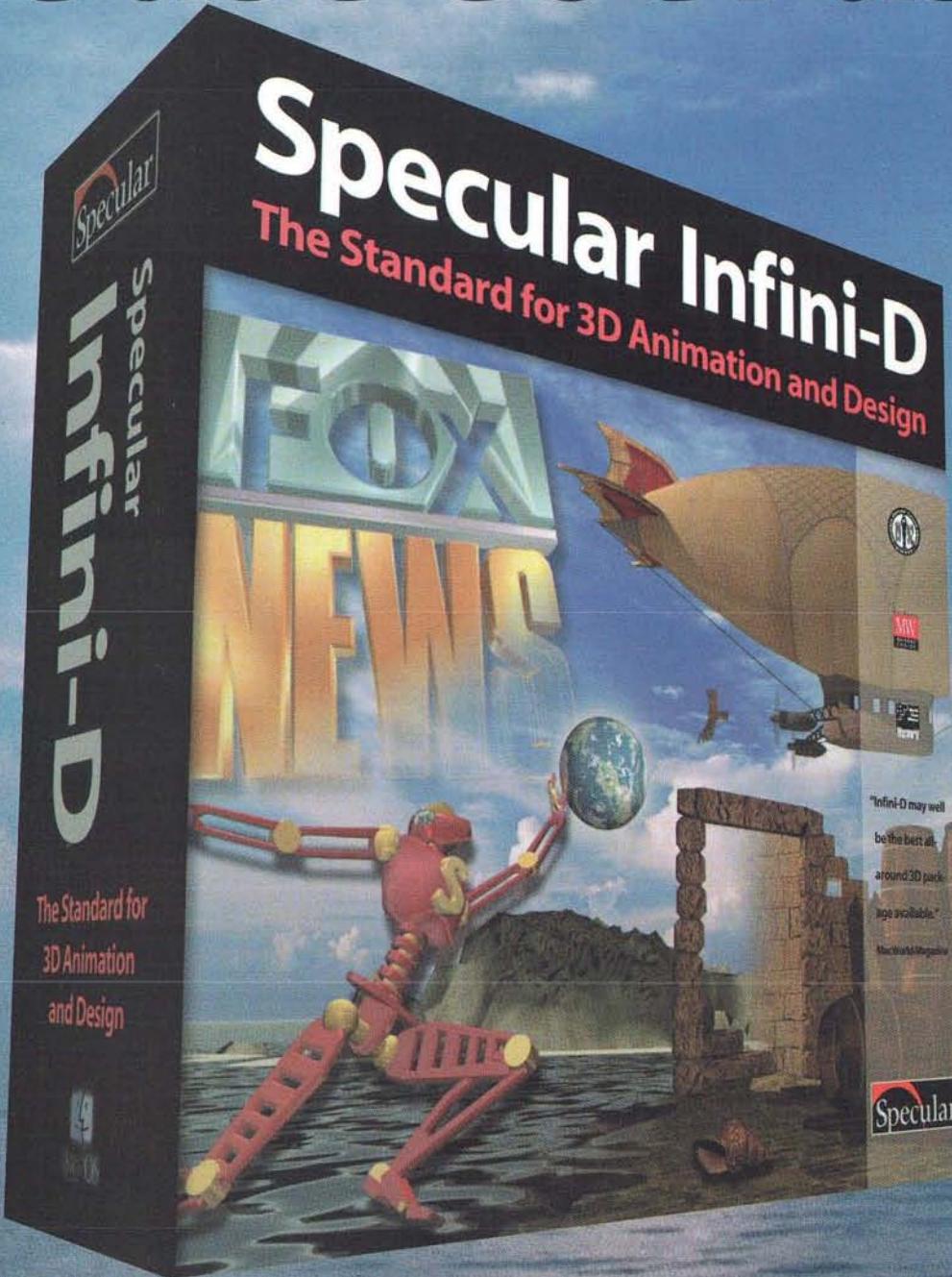
In recent months, Apple has already begun shedding several projects, including the Kaleida multimedia scripting-language project and the Taligent user-interface/development-environment project, both done jointly with IBM; the Dylan project to develop a scripting language for the Mac similar to Microsoft's successful Visual Basic for Applications on Windows; and most recently PowerTalk, an E-mail services technology.

And Apple is now showing the public some of the progress the company has made in the development of the Copland OS, to calm fears that this major effort has been sidetracked (see "Copland's New Abilities," in this section). But Copland managers also say Apple is willing to drop some features in the first Copland release if that's what it takes to ship Copland by spring 1997. One delayed feature could be the planned simplification of the System Folder, say these managers. Another delayed technology may be Copland's implementation of QuickDraw GX, say sources at Apple.

According to David Nagel, Apple's research chief, Apple has picked three technologies to form the basis of the company's future: Copland, the Newton personal-digital-assistant technology, and the Pippin game-player/Internet-surfer system.

Additional reporting by CAMERON CROTTY and CHARLES PILLER. For the latest on Apple's restructuring, see *Macworld's* online coverage at <http://www.macworld.com>.

The Best in 3D Just Got Faster!



Specular
Specular Infini-D

The Standard for
3D Animation
and Design

Specular Infini-D
The Standard for 3D Animation and Design

NOW SUPPORTS
QUICK DRAW
3D

QuickDraw 3D will revolutionize the way you do 3D on the Macintosh:

- No more wireframes • No more arcane 3D files • No more SGI envy
- Work with texture-mapped objects in real time • Cut and paste your 3D objects as easily as text.

We're talking total, real time interaction, the way 3D should be. Just think what QuickDraw 3D and Infini-D will do for your creativity.

Only Specular could make 3D this easy. No other program can touch Infini-D's combination of powerful features, ease-of-use and competitive price. Infini-D 3.0 already gives you spline-based modeling, animated spline morphing, editable motion paths and velocity graphs; think of QD3D as icing on the cake. You owe it to yourself and your Mac to take a look at Infini-D 3.0.

OUR GUARANTEE

If for any reason Infini-D 3.0 fails to meet your expectations, return it within 30 days for a full refund!

VISIT OUR WEB SITE
<http://www.specular.com>

Specular

FOR MORE INFO OR A
FREE CATALOG, CALL

1-800-433-7732

ComputerWare 1-800-326-0092 MacMall 1-800-222-2808 MacWarehouse 1-800-255-6227 MacZone 1-800-248-0800

Circle 41 on reader service card



If you see
this
in
your head

you need
this in your
hand.

You've got an idea busting to get out.

A tire-smoking, head-smacking, gold-pencil-winning idea. And there's only one way you're gonna pull it off. You grab your Wacom. The one with the Erasing UltraPen. The only pen that's incredibly well balanced, because it has no cord or batteries to make it top- or bottom-heavy. So *right*, so responsive to every move of your hand, it makes drawing, retouching or editing images on your computer feel as natural as breathing air. Now you're into it. You're masking and moving, brushing and stroking, sharpening and blurring with zen-like control. Every pressure-sensitive tool in your software feels like it's coming alive at your fingertips. No way can you get response like this with anything but a Wacom. And no way does this idea get anything less.

A tire-smoking, head-smacking, gold-pencil-

The ArtZ II line. 6x8, 12x12, & 18x25.
All compatible with your software, your computer,
and your state of mind.



IMPRESSIVE



WACOM

Get us on the phone, get us on the web, but get a Wacom. Call 1-800-922-2585 for the nearest dealer or FastFax information. On the web, we're <http://www.wacom.com>

Artwork created by Paul Hart of Portland, OR with a Wacom ArtZ II & Adobe Photoshop. ©1995 Wacom Technology Corp., 301 SE Columbia Street Blvd., #100 Vancouver, WA 98651. Wacom and ArtZ II are registered trademarks and UltraPen is a trademark of Wacom Co., Ltd. All rights reserved. All other trademarks are property of their respective companies.

Circle 146 on reader service card

New Products

THE LATEST MACINTOSH RELEASES

COMMUNICATIONS

28.8 Modems for All

Everyone wants a 28.8-Kbps modem for online and Internet access. U.S. Robotics (708/676-7010) now offers these fast modems for desktop and notebook Mac owners along with fax software and an Internet connection kit. For the desktop, U.S. Robotics has the \$279 Sportster 28.8 Faxmodem and the \$329 Sportster Voice 28.8 Faxmodem (it includes a speakerphone, voice mail, and call logging), both of which support the new 33.6-Kbps extension to the 28.8-Kbps V.34 standard. The company also offers the \$329, 28.8 PC Card for Mac, which fits in the new 5300-series and 190-series PowerBooks' PC Card slots.

Fax That Server

Global Village Communication (408/523-1000) has added fax-receiving capability to its \$2099 OneWorld Combo and \$1499 OneWorld Fax telecommunications network servers. The upgrade is \$99.

DISPLAY

Colorful Monitors

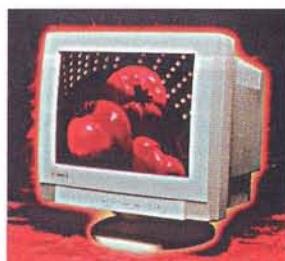
Monitor makers constantly refine their displays and thus always seem to have a new model available. Here are some of the latest crop. (Note that you'll have to buy a Mac adapter separately; it costs about \$30.)

• Corion Industrial (408/980-8988) has introduced its ArtMedia monitors, which come in 14-, 15-, 17-, and 20-inch models. All use Trinitron tubes. They are expected to ship by July.

• Orchestra MultiSystems (714/891-3861) offers the \$629, 17-inch Tuba II and the \$429, 15-inch French Horn II monitors.

- Sampo Technology (770/449-6220) has the \$949, 17-inch AlphaScan 760.

- Smile International (714/546-0336) is shipping the \$720, 17-inch CA1716SL and the \$420, 15-inch CA1516SL.



Smile CA1716SL

- Techmedia Computer Systems (714/379-6677) is shipping the TCM-1750, a 17-inch monitor that costs \$699.

PCI Video Cards

Itching to use one of the PCI slots in your new Power Mac? Consider Integrated Micro Solutions' (408/369-8282) TwinTurbo-128M2 video-display card. The card accepts standard Mac VRAM SIMMs to increase the card's standard 2MB of video RAM to 4MB. The \$399 card also has built-in QuickDraw acceleration for movie playback.

Meanwhile, Micro Conversions (817/468-9922, mcimktg@onramp.net) will ship two low-cost PCI video cards in March: the \$319 1324PCI with 1MB of VRAM and the \$375 1724PCI with 2MB of VRAM.

EDUCATION

Multimedia Design Courses

Peachpit Press (510/548-4393) has released four CD-ROMs that teach professional graphics and multimedia production skills. The three Color-

Course CDs—Photography, Illustration, and Imagesetting—cost \$50 each; the Mac-Graphics Interactive Workshop costs \$80.

Reading, 'Riting, and 'Rithmetic

Written by teachers, the \$149 nine-course Elementary Science and Math Software CD from HyperTech Media (301/447-1689) covers weather, buoyancy, insects, seeds, plant growth, acid rain, food chains, ecological balance, and math. The company also offers two CDs aimed at teaching young children how to read and write: Old Turtle, and Alexandra, Keeper of Dreams, both based on popular books of the same names. They cost \$49 each (\$69 bundled).

Make Your Own Music

Voyager (212/431-5199) has released Making Music, a \$40 CD that teaches children ages five and up how to make music.

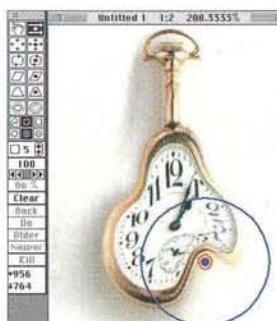
GRAPHICS

Automated Image Conversion

binuscan (212/681-0600) has enhanced its \$1950 ColorPro software with the ability to convert RGB images automatically to black and white. The program works in the background, color-correcting and sharpening the image before converting it. The program also performs CMYK separations and Photo CD conversions.

Stretch That Image

The Valis Group's (415/435-5404, valisgroup@aol.com) \$199 Flo' 2.5



Flo' 2.5

lets you work with an image as if it were on a rubber canvas that you can stretch. The Flo' package includes a stand-alone version and a Photoshop plug-in.

CAD Improvements

Bentley Systems (610/458-5000) has revised its MicroStation V5 CAD software. The new MicroStation 95 costs \$3950, with upgrades from V5 priced at \$475. The product runs on Power Mac systems; several Unix workstations; Windows NT, 95, and 3.1 systems; and OS/2 systems.

Meanwhile, Ashlar (408/746-1810) has introduced DrawingBoard, a \$250 cross-platform CAD program aimed at nonprofessionals doing home and landscape remodeling.

Packaged Artwork Galore

Dozens of companies offer clip art, stock photos, and model libraries. Here are some of the latest offerings.

• Replica Technology (716/337-0621) offers five interior-design-oriented collections of 3-D objects for use in Infini-D, as well as five for Strata StudioPro. Prices range from \$65 to \$129.

• Image Club (403/262-8008, imageclub@aol.com) has the \$99 Sketches on the Town collection of nighttime entertainment images and the \$99 Businessville conceptual business images.

• The Stock Market (212/684-7878) has a second volume of stock images; reproduction prices vary based on how an image is used. Meanwhile, Index Stock Photography (212/929-4644, info@indexstock.com) has put some of its images on its World Wide Web site (<http://www.indexstock.com>); to get the full-resolution image for personal use, you fill out an E-mail form.

• T/Maker (415/962-0195) has released the ClickArt Express series, which contains 16 titles that cost \$15 each and offer 100 to 200 images each. Titles range from Framers & Bursts to Real Estate.

• FoodPix (310/837-9900, foodpix@aol.com) is the first stock-continues

New Products

PRINTING

image agency devoted to food-related images. There are over 1900 images in its first CD. Publication prices vary.

INPUT DEVICES

Bar-Code Reader

Percom (503/344-1189) has introduced the \$249 Bar Code EasyWand, an ADB-based reader wand and software-based decoder.

MULTIMEDIA

Learn 3-D Animation

Electric Image (818/577-1627, electric.img@applelink.apple.com) is shipping the ElectricImage Scholastic Edition, a \$795 subset of the company's 3-D-animation software aimed at students. The company also recently released version 2.5.2 of the \$7495 full ElectricImage as a free upgrade to version 2.5 owners.

Speedy CDs

Toshiba America (714/457-0777) has introduced the XM-3701 series of 6.7-speed CD-ROM drives. They also support 1x and 2x speeds. Internal drives cost \$415, external drives \$515.

NETWORKING

More Ways to Communicate

Stalk Software (415/383-7164, sales@stalker.com) has added three messaging modules for its CommuniGate integrated-messaging platform: SMTPGate for Internet mail, Paper-Gate for wireless paging, and Print-Gate for routing E-mail and faxes to a local printer. Prices vary based on the number of users.

Network Backup

Legato Systems (415/812-6000) has announced ClientPak for Macintosh, a \$1500 network-backup program that lets users recover data without administrator intervention.

Color Laser Choices

As color laser technology gets more affordable, more companies will offer it. QMS (334/633-4300) is the latest entrant, with three choices: the \$5799 magicolor CX/8 (with 8MB of RAM and 300-dpi color output), the \$6499 magicolor CX/20 (with 20MB of RAM and 600-dpi color output), and the \$7999 magicolor CX/32 (with 32MB of RAM and 600-dpi color output). All three models support 600-dpi black-and-white output.

Richer Color Inks

Graphic Utilities (408/577-0334) is offering pigment-based ink-refill cartridges for Hewlett-Packard ink-jet printers. The use of pigments, rather than standard dyes, should make colors richer.

PUBLISHING

Consistent Color Gets Closer

To help designers and publishers get consistent color, several companies are offering help.

- Praxisoft (703/729-3391, praxiscorp@aol.com) has released the \$129 Color Compass 1.1, which lets you create colors that you can use across programs. It also supports ColorSync for consistent printing. The company has a \$100 version that works as a plug-in for QuarkXPress.

- Lasergraphics (714/753-8252) has released its \$895 FullCircle closed-loop color-calibration software. It requires use of a Lasergraphics film recorder.

- NewGen Systems (714/641-8600) has released the \$16,995 ChromaxPro Color Proofer, a PostScript-compatible dye-sublimation printer with built-in color-management controls.

Working with Fonts

Fonts are like potato chips: you always want more. Monotype Typography (312/855-1440) has released version 5.0 of its \$50, 4100-

font CD collection. You pay for individual fonts as you unlock them.

And if you're looking for something different, consider the \$50 Magick & Mystick set of symbol and talisman fonts from Deniart Systems (416/941-0919).

STORAGE

Ever Cheaper Capacity

Quantum (408/894-4000) plans to begin shipping in March 1996 two 3.5-inch high-capacity internal hard drives: the \$395, 2.3GB Sirocco and the \$265, 1.6GB Sirocco. Yes, you read this right, but note that these prices are what Quantum charges resellers, so store prices will be 20 to 40 percent higher.



Quantum Sirocco Drive

TITLES

Insider's Guide

Want to know as much as a *Macworld* editor about the computer industry? Check out *PC Roadkill*, a \$20 book by Michael Hyman from *Macworld*'s sibling company IDG Books Worldwide (800/434-3422).

The World on Your Desktop

The powerful imagery of Earth as seen from satellites is now available on CD-ROM. Now What Software (415/885-1689) offers Earthscapes in Time, a \$50 CD that shows how the



Earthscapes in Time

Earth has evolved. And Rocky Mountain Digital Peeks (303/258-3779) offers the \$39 Earth Observatory, which is based on a space shuttle's Earth observations.

Healthy Computing

As computers have become popular, it's clear they can be misused in ways that lead to health problems. Two new books try to prevent such problems: O'Reilly & Associates' (707/829-0515) \$22 *The Computer User's Survival Guide*, by Joan Stigliani, and Prentice-Hall's (800/382-3419) \$19 *Compute in Comfort*, by Paul Linden.

Internet Guides

Looking to get on the Internet but don't know where to go once you're there? IDG Books Worldwide (800/434-3422) offers two guidebooks: the \$40 *Internet Yellow Pages 1996 Edition*, edited by Gregory B. Newby (how ironically he's named!), and the \$20, *60 Minute Guide to the Internet*, by Andrew Kantor.

UTILITIES/TOOLS

Virus Protection

S&S Software International (617/273-7400, info@drsolomon.com) has released Dr. Solomon's Anti-Virus Toolkit, a \$99 utility that detects and deletes viruses.

CD-ROM Drives' Best Friend

FWB (415/325-4392; info@fwb.com) has revised its CD-ROM Toolkit, boasting a new interface. Version 2.0 costs \$79; upgrades cost \$29.

VENDORS: TO HAVE YOUR PRODUCTS CONSIDERED FOR PUBLICATION IN NEW PRODUCTS, SEND A PRESS RELEASE WITH PRODUCT DESCRIPTION, PRICE, AVAILABILITY, AND READER CONTACT INFORMATION, PLUS OPTIONAL PHOTO OR SCREEN SHOT, TO NEW PRODUCTS EDITOR, MACWORLD, 501 SECOND ST., SAN FRANCISCO, CA 94107; NEW_PRODUCTS @MACWORLD.COM.

Q

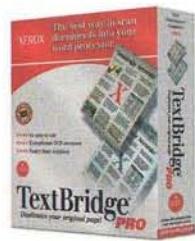
Our TextBridge Pro scanning software even reads the characters you don't see.

XIf you've ever scanned text, you know. Getting tabs, margins and paragraph breaks right is just as important as getting words right. Because without format, you might as well retype the whole thing.

Scanning pages with TextBridge® Pro OCR software is just like putting the original document straight into your Mac. Headers, columns, cell

tables, text and all. You get a formatted document you can work with right away.

TextBridge Pro scans text directly into any word processing program with superior accuracy. It's also accelerated for the



PowerMac. And with the Xerox Satisfaction Guarantee that includes unlimited toll-free support*, plus a thirty-day, risk-free offer, you just can't go wrong.

To learn more, call us at 1-800-248-6550, ext. 3, visit us at www.xerox.com/products/tbpro/ or see us on CompuServe. You'll find out more about the scanning software that can read almost anything. Even if it's invisible.

*Upgrade to
TextBridge Pro
from any
OCR scanning
software
for just
\$129**

THE DOCUMENT COMPANY
XEROX

*For registered users. *Manufacturer's suggested retail price. Actual price may vary. ©1996 Xerox Corporation. Xerox,®The Document Company,®the stylized X, and TextBridge®are trademarks of Xerox Corporation.



Circle 100 on reader service card

Reviews

Adobe Illustrator 6.0

NEW TWEAKS NOT ENOUGH
TO SURPASS FREEHAND 5.5

DON'T LET THE VERSION NUMBER fool you: Adobe Illustrator 6.0 is not a dramatic upgrade. In fact, it may be the least substantial full upgrade in Illustrator history. The core program remains virtually unchanged since version 5.5, with modifications restricted almost exclusively to plugins. Even so, if you're a true-blue Illustrator user who'd rather eat rocks than switch to Macromedia FreeHand 5.5, then you'll want to upgrade to Illustrator 6 as soon as possible. The enhancements are few in number, but they eliminate many of the headaches associated with previous versions.

Except for a minor gradient hiccup in version 5, printing from Illustrator has always been extremely reliable; now it's easier to use. You can print color separations directly from Illustrator 6 without resorting to the Separator utility. If you encounter PostScript errors (such as limitcheck), you can convert gradients into blends, and tile patterns into objects, using the new Expand command. These enhancements are hardly exciting—in a perfect world, Illustrator would have always offered such options—but they make printing less of a nuisance.

TIFFs Were Meant to Be Tagged

In 1988, FreeHand 2.0 introduced support for TIFF images. More than seven years later, Illustrator follows suit. In fact,



Illustrator has gone positively nuts in the compatibility department, importing or exporting a total of 15 file formats, including Kodak Photo CD, JPEG, and flattened Adobe Photoshop 3 images. Best of all, Illustrator 6 includes a new EPS parser that lets you open drawings created in FreeHand and other programs. I was able to open every illustration I tried, including a few that contained imported images and custom PostScript fill patterns. Only text proved a problem, sometimes breaking into hundreds of separate blocks.

But while Illustrator's TIFF support

comes as welcome news, its implementation suffers. Where FreeHand wisely tags TIFF files on disk—the *T* in TIFF stands for *tagged*, after all—Illustrator imports every pixel and converts the image into its internal PostScript format. This means more work for Illustrator and more waiting for you. For example, I imported two Photo CD images into both FreeHand 5.5 and Illustrator 6. In FreeHand, it took a few seconds to import the images, and the completed illustration consumed 33K on disk. In Illustrator, it took a whopping 14 minutes to import the images, and the finished illustration consumed 44MB—

RATINGS

Outstanding **★★★★★** = 9.0–10.0 Very Good **★★★★** = 7.0–8.9 Good **★★★** = 5.0–6.9 Flawed **★★** = 3.0–4.9 Unacceptable **★** = 0–2.9

more than 1000 times the drive space that the FreeHand file took.

FreeHand speeds up screen redraw by letting you control the on-screen resolution of an imported TIFF image, making screen redraw nearly instantaneous; Illustrator lacks image-redraw controls and at times is unbearably slow. On the other hand, Illustrator wisely tags EPS images on disk and imports just the PICT preview, so if you want to import large images, you're better off sticking with the EPS format, just like in the old days.

Illustrator and Photoshop

Since the overwhelming majority of Illustrator artists also use Photoshop, Adobe has built a virtual bridge between the two. You can now drag objects from Illustrator and drop them into Photoshop. Photoshop rasterizes the objects on the fly according to the resolution of the image window, so higher resolutions yield more pixels. You can likewise drag images from Photoshop into Illustrator, but only at 72 dpi. You need System 7.5 and lots of RAM (at least 32MB) to take advantage of drag and drop, but to its credit, Illustrator relies on the Mac's native drag-and-drop functions, rather than infesting your system with Microsoft OLE (as its sibling Adobe PageMaker does).

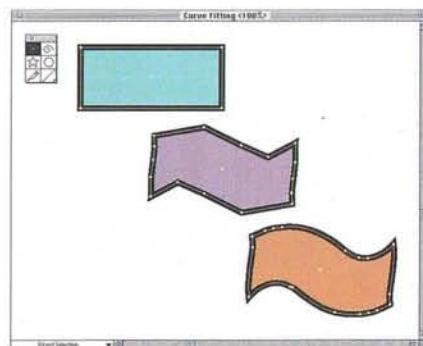
You can also rasterize objects directly within Illustrator, lift colors from pixels using the eyedropper, and apply Photoshop-compatible filters to imported images. Illustrator supports a wider range of Photoshop filters than FreeHand does, including the external filters that ship with Photoshop. The one caveat is that you cannot apply a filter to a tagged EPS image, so you have two choices: either import an image in its entirety and retain the option to filter it, or tag the EPS file on disk and do without filters. There is no need for such a trade-off in FreeHand.

Plug-ins Come of Age

In version 5, Adobe opened up Illustrator to third-party plug-ins. To get the ball rolling, Adobe threw in a few plug-ins of its own. Illustrator 6 expands plug-ins, permitting them to appear as commands or tools. Where you once had to choose commands and enter numerical data to create polygons, stars, and spirals, you can now drag with tools. Illustrator equips the tools with lots of keyboard tricks, allowing you to add sides to a polygon or modify the twist of a spiral as you draw the

shape. These are some of the best tools for creating primitives (simple shapes) that I've seen.

Version 6 also adds curve fitting, which lets Illustrator distort paths accurately. For example, where the old Twirl filter merely moved points around, the new Twirl command adds points intel-



Distortions Done Right The orange shape is the result of applying Illustrator 6's new Twirl tool to the blue rectangle; the purple shape shows the less-desirable results of Illustrator 5's Twirl filter. Thanks to curve fitting, Illustrator 6 is able to add points and bend the segment where needed.

ligently and bends segments with mathematical precision (see "Distortions Done Right"). Only a handful of Illustrator's commands take advantage of the new curve fitting, but this feature should be a boon to third-party plug-in developers that do not include curve-fitting capabilities of their own.

Other plug-in improvements include a floating palette of alignment and distribution options and a Control palette for quickly moving, scaling, and rotating whole objects. A new Path Pattern filter lets you apply specially constructed tile patterns to the stroke of a path. Illustrator can stretch and bend the tiles (again using curve fitting) so that the tiles follow a path's twists and turns like diamonds along the back of a rattlesnake.

The knife function—implemented both as a tool and a command—is the rotten apple in the new crop of plug-ins. Designed to create free-form slices through filled objects, it seems to have missed the testing cycle. The knife has a habit of deleting unfilled paths, particularly closed ones. You can spare unfilled paths by pressing the control key, but this essential trick goes undocumented. And a documented technique for duplicating sliced paths by double-clicking on the knife tool icon doesn't work.

FreeHand Stands Tall

When all is said and done, FreeHand 5.5 retains a few key advantages, especially in the realm of blends. Illustrator's reliance on a tool instead of a command makes blending more cumbersome than it should be; the blend function is notorious for generating errors if you don't click according to rigid specifications; and Illustrator can't redraw blends when you move, edit, or recolor shapes.

Illustrator's autotracing function is similarly inferior. Despite Illustrator 6's support for a multitude of image formats, black-and-white tracing templates are limited to PICT or MacPaint formats. You can't adjust the template after importing it, and Illustrator can trace only one path at a time.

FreeHand also continues to be the faster program, especially where text and imported images are concerned. FreeHand lets you mix page sizes in one document, automatically advance from one page to the next, and zoom and scroll with far more precision. And perhaps most important, only FreeHand 5.5 exists on both platforms. Illustrator for Windows has stalled at version 4.1, essentially the equivalent of Illustrator 3 for the Mac.

The Last Word

Illustrator does offer its share of advantages. Even FreeHand devotees admit Illustrator's pen tool is a work of art. Illustrator also provides better gradients, masking, guidelines, and transformation capabilities in addition to shape-creation tools, curve fitting, and Photoshop support. But the plain fact is that FreeHand has made more substantial progress than Illustrator in the last two years and looks poised to continue moving aggressively into Illustrator's territory. If FreeHand doesn't interest you, then the changes in Illustrator 6 justify the \$99 upgrade cost. But if you're on the edge, give FreeHand 5.5 a serious look before making your decision.—DEKE McCLELLAND

RATING: ★★★★/7.1 **PROS:** Improved file-import capabilities; drag and drop between Illustrator and Photoshop; supports Photoshop-compatible filters; revised shape-creation tools; curve fitting for better distortions. **CONS:** Inefficient image handling; clumsy blending and tracing; knife tool has problems. **COMPANY:** Adobe Systems (415/961-4400). **LIST PRICE:** \$595.

FileMaker Pro 3.0

DATABASE FAVORITE GOES RELATIONAL, WORKS THE WEB

FIEMAKER PRO HAS DEVELOPED an outstanding reputation over the years as a database for mere mortals, not just programmers. Year after year, it has scored well with end users, more on the strength of its usability than on its power. Building on this legacy, FileMaker Pro 3.0 offers improved ease of use and a power boost while maintaining its reasonable price.

Learning to Relate

The simplest database is a two-dimensional table, much like a spreadsheet. The simplest sort of *relational* capability is to look up data in one of these tables and add it to another table. In a relational link, two columns with the same information in two different tables—a column of Social Security numbers that appears in a table of employee salaries and in a table of employee home addresses, for example—are used as the lookup connection between the tables. With clever design, you can arrange a relational database to contain little redundant information (for example, storing address data in only one place), so that large multitable business databases become much more compact than they would be if everything were stored in a single table.

Earlier versions of FileMaker could perform a limited type of relational lookup; 3.0 is a fully relational database, supporting both one-to-one and one-to-many links, a dramatic improvement for users with more challenging database needs. To implement table linking, FileMaker Pro 3.0 uses a spartan dialog box rather than the fancy graphical mapping found in competing packages, but it works well enough for the typical small-business environment.

The Big Easy

The new relational capabilities are great for FileMaker developers, who usually generate the most complex FileMaker applications. But for nonprogrammer end users looking for easy database solutions, the templates provided on CD-ROM will be the biggest news in this release. A group of 23 business templates covers everything from asset management to

time cards, with professional-quality expense-control systems, personnel databases, and inventory/accounting software. The 8 education templates run from the obvious (student records) to the adventurous (a nifty Field Trips template), and the 13 home templates include one for



Get What You Want You can set up a product catalog quickly with the appropriate FileMaker template, and with a little script engineering you can make the catalog a Web site.

recipes, a wedding planner, a medical-records keeper, and a check tracker that resembles a mini-Quicken.

You can easily take all of the templates apart and rebuild them to your heart's desire in FileMaker's Layout mode; a first-time user can remake templates into a custom application in a single afternoon using only the information in the built-in tutorial. This sort of simplicity is the main reason for FileMaker Pro's popularity in the Macintosh small-business-database market.

Nothin' but Net

FileMaker Pro 3.0 supports TCP/IP and IPX networking protocols, and includes instructions for using AppleScript to set up your FileMaker database on the World Wide Web. You can use this capability to set up a database of URLs in a sort of special-interest, roll-your-own Yahoo-type site, or use the Product Brochure template and the FileMaker Events URL suite to open your own retail Web site (see "Get What You Want"). Once you have your catalog on the Web, you can easily modify it by adding or deleting records in the traditionally easy FileMaker way.

Limits

FileMaker Pro is aimed at small and medium-size businesses interested in efficient database solutions, and its programming capabilities are limited compared with those in competitors like ACI US's 4th Dimension (see *Reviews*, March 1996), Blyth's Omnis 7, or Microsoft FoxPro. Claris greatly expanded the scripting command set from previous versions, and it's still possible to work wonders with third-party script extenders such as Power Agent. But even with its improved scripting and third-party options, FileMaker's capabilities can't compare with those of a real programming environment that has a proper debugger. FileMaker Pro isn't as fast as competitors at searching large flat files and offers minimal connections to the venerable, large-company world of SQL databases.

The Last Word

Even these few drawbacks pose no great threat to FileMaker's popularity. FileMaker 3.0's developers aimed squarely at the future rather than offering a backward path to legacy data in large corporate databases; as a result, FileMaker Pro delivers a generous assortment of templates and provides a way to put databases on searchable World Wide Web sites. For most small businesses, a fast way to post catalogs and other company information to the Web is a more significant database capability than improved programmability, a C-language interface for code resources, blinding flat-file search speed, or a SQL interpreter. And with FileMaker's price below \$200 and upgrades for \$99, even the smallest enterprise can afford to make the investment.

For the growing midrange of Mac database users—neither simple list-keepers nor users who need Oracle-like high-end capabilities—FileMaker Pro 3.0 is an ideal program. It's easy to learn, easy to use, and provides a comprehensive assortment of tools for common database tasks.—CHARLES SEITER

RATING: ★★★★/8.2 **PROS:** Large collection of powerful templates; World Wide Web capabilities; easy to learn and use. **CONS:** Minimal SQL connections; slow flat-file searches; limited programming and scripting. **COMPANY:** Claris (408/727-8227, info@claris.com). **COMPANY'S ESTIMATED PRICE:** \$199.

PowerCurve 601/120

APPLE'S POWER MAC 7500 HAS A NEW RIVAL

FRESH ON THE HEELS OF ITS POWERFUL yet inexpensive PowerWave 604 series, Power Computing has introduced a system that beats Apple's business desktop standard—the Power Macintosh 7500/100—in both performance and price, while offering nearly identical capabilities.

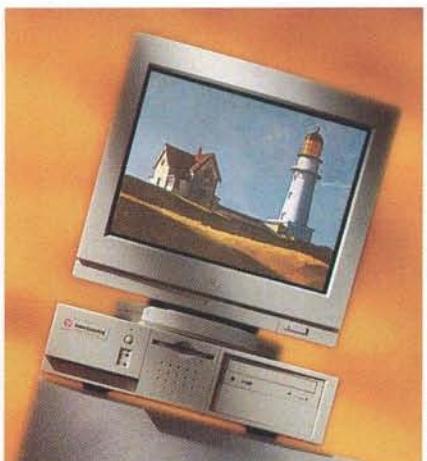
You'll save money buying a PowerCurve, but not *tens* of money. A solid professional-level system should include a 1GB hard drive, 16MB of RAM, a 256K cache card, a 4x CD-ROM drive, 2MB of video RAM, and a keyboard. In this configuration, Apple's 7500/100 costs \$3059 with a third-party extended keyboard, while Power Computing charges \$2777—a savings of \$282. Power Computing skimps a little to give you that savings but also adds a couple of features Apple doesn't offer.

Losses and Gains

Unlike the 7500, the PowerCurve lacks memory interleaving, a design that boosts performance by about 5 percent when two adjacent DIMM slots contain same-capacity, same-speed RAM.

The PowerCurve doesn't offer the 7500's basic video capabilities, either. Most people don't need AV technology, but for those who do, Power Computing offers two solutions: a \$150 Diamond Javelin TV card with low-end video-in and TV-tuner capabilities, or an ATI MM card for the high-end multimedia user. Power Computing will charge \$300 to \$600 for the ATI MM, depending on its configuration.

Some of the initial PowerCurves



ROBERT PERRY

don't offer a power outlet for your monitor. Although I consider this a minor shortcoming, a number of readers complained that I didn't point this out in my review of the PowerWave 604 series (see *Reviews*, February 1996). Power Computing claims that it's fixing this glitch and that all PowerCurves will offer this "convenience outlet" by spring.

Unlike PowerWaves, PowerCurves offer no option to add NuBus cards. Power Computing's \$249 StarGate riser card—which lets you install two NuBus cards and two PCI cards rather than the standard three PCI cards—won't be offered for the PowerCurve.

There's some compensation for these drawbacks, though. Besides the \$282 savings, you get a slightly faster system: Macworld Lab tests show that the PowerCurve is 3 percent faster than the Power Mac 7500/100. As is typical of Power Computing systems, adding PCI cards,

cache, RAM, and VRAM to the PowerCurve is easy, thanks to a case design that's more accessible than the 7500's.

If you're a recent convert and don't have Macintosh software already, you'll find real value in the PowerCurve's bundled applications, which include ClarisWorks 4.0 and other useful extras. You'll also appreciate the videotape that walks you through your new system.

The low-profile PowerCurve case lets you install two internal drives, and one of the bays can handle removable media, just as in the 7500. Power Computing plans to offer a full-size desktop case with four internal drive bays within a few months.

Power Computing says the PowerCurve's CPU is upgradable, and indeed the 120MHz PowerPC 601 comes on a removable card. But the company doesn't yet have Apple's permission to release a faster CPU card based on the PowerPC 604. I tried using the CPU cards from a PowerWave and a Power Mac 8500, but they don't function in the PowerCurve, so you can't get around the uncertainty by betting on today's alternate solutions.

The Last Word

The PowerCurve 601/120 performs as well as any other PCI Power Mac, and for most buyers there's no clear-cut reason to choose one over the other. Buyers who are new to the Mac will like the bundled software, but for the rest of us, it's a toss-up.—GALEN GRUMAN

RATING: ★★★★/7.5 **PROS:** Fast; moderately priced; accessible case for upgrades; good software bundle. **CONS:** No built-in AV capability; no memory interleaving; cannot use StarGate NuBus bridge. **COMPANY:** Power Computing (512/258-1350, info@powercc.com). **DIRECT PRICE:** Base model \$1849, as tested \$2777.



PowerCurve 601/120—Excellent Speed at a Competitive Price

Best result in test. Longer bars are better. Results are times as fast as a Centris 650 (Centris 650 = 1.0). Products are listed in decreasing order of overall performance.

PowerWave 604/120
PowerCurve 601/120*
Power Macintosh 7500/100*
Power Macintosh 7200/90*
Power Macintosh 7200/75

Overall Score

Shows typical performance in a mixed-use environment, such as a company or school.



CPU-Intensive

Shows performance for most business and personal tasks.



FPU-Intensive

Shows performance for analytical, 3-D, and other specialized uses.



Disk-Intensive

Shows performance of the Mac's data-transfer capability, which affects all users.



*With optional 256K cache.

For detailed information on how we tested, see "The Best Mac for the Job," *Macworld*, February 1996, page 110.
—Macworld Lab testing supervised by Mark Hurlow

PowerBook Duo 2300c

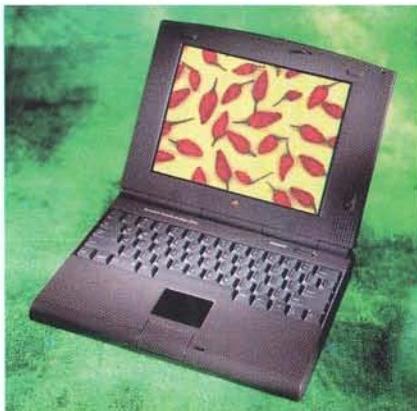
A LITTLE PACKAGE, A LOT OF POWER

THE NEWEST MAC SUBNOTEBOOK, the PowerBook Duo 2300c, would be the perfect accoutrement for James Bond's new BMW Z3 Roadster: fast, sophisticated, and curvy. Although it has the same sleek lines as the 200-series Duo, the 2300c offers a larger screen—9.5 inches to the 200's 8.4—and a touchpad that you can double-click to select items. Still, the 2300c's real allure lies not in its more obvious charms, but in the 100MHz PowerPC chip inside. The megahertz rating is admittedly misleading—it's only a 603e, after all—but this 4.8-pound Mac is as fast as a desktop Power Mac 6100/60.

Portability . . . at a Price

Speed and light weight generally come at a price, however, and this Duo is no exception. The model I reviewed sells for \$4699 and comes with a 14.4-Kbps Express fax modem, 20MB of RAM, and a 1.1GB hard drive—a powerful system, even with the slow modem. (For \$1000 less, you can get a 2300c with 8MB of RAM and a 750MB hard drive.)

That's as expensive as the twice-as-fast Power Mac 8500, and it doesn't include such niceties as spare batteries or docking stations or floppy drives. Of course, you can't balance an 8500 on your knee or tuck it under your arm, but let's face it: this Duo is expensive. A comparable PC subnotebook with a comparable processor (a 75MHz Pentium, 100MHz DX4, or 100MHz 586) runs about \$1000 less than the 2300c.



KEVIN CANDLER

Where Your Money Goes

I enjoyed using the 2300c. Its performance is equal to an entry-level business Macintosh's and about 60 percent faster than that of the 280c, previously the top-performing Duo.

With the right assortment of Apple docking stations, the Duo adapts to almost any environment. A \$109 Floppy Adapter lets you attach an external floppy (\$139) or CD-ROM drive (about \$350 from big companies like Apple and NEC Technologies) and an external input device; a dock (Newer Technology's Ultra-Dock with Ethernet is \$510) provides other Mac ports, including those for Ethernet connections and external display. (The 2300c has only a serial port if no dock is attached.)

The 2300c's large, crisp active-matrix screen is easy on the eyes, and the text is quite readable; that extra inch makes a noticeable difference. And even devout

mouse users will find the touchpad easy to adjust to and more natural to use than a TrackPad with a separate button. But I'd forgo the Express modem for an external model, even though that would incur the hassle of providing a power supply—14.4 Kbps simply doesn't cut it for Apple Remote Access, and navigating online services or the Internet is merely adequate at that speed.

The Last Word

The Duo 2300c is a fine subnotebook. Given the poor reception of ultralight portables on the PC side, it's nice that Apple remains committed to its subnotebook line despite the small target market. Yes, the price is high, especially when you begin outfitting the system with docks and peripherals. And yes, I wish there were a simple way to add an infrared port like that in the 5300-series PowerBooks.

Overall, though, the 2300c is a decent system that will appeal to Duo devotees; for them, the 2300c is a no-brainer. (And if you own a 200-series Duo, you can replace the motherboard with the 2300c's Copland-ready, 603e-based board for \$1300.) The rest of us will probably have the same reaction to the 2300c as we had to the BMW Z3: a longing look before we get back into our Volvos.—GALEN GRUMAN

RATING: ★★★/5.9

PROS: Entry-level business-Mac performance in a small, lightweight package; good-size, crisp display. **CONS:** Pricey; requires a variety of add-ons to exchange files and work with peripherals. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** With 8MB of RAM and 750MB hard drive \$3699; with 20MB of RAM, 1.1GB hard drive, and 14.4-Kbps fax modem \$4699.



Duo 2300c Holds Its Own against the 5300

Like the 5300, the newest Duo has a PowerPC 603e with a clock speed that triples that of the 68040 chip it replaces. Also like the 5300, the 2300c barely doubles the 280c's performance since factors like hard-drive speed, video display, and bus architecture diminish the 603e's speed.—Macworld Lab testing supervised by Danny Lee

Longer bars are better. Results are times as fast as a PowerBook 520c (520c = 1.0). Products listed in decreasing order of performance.

Overall Score

Shows typical performance in a mixed-use environment, such as a company or school.

CPU-Intensive

Shows performance for most business and personal tasks.

FPU-Intensive

Shows performance for analytical, 3-D, and other specialized uses.

Disk-Intensive

Shows performance of the Mac's data-transfer capability, which affects all users.



PhotoDeluxe 1.0

"PHOTOSHOP LITE" MAKES QUESTIONABLE COMPROMISES

THE INCREASED POPULARITY OF low-cost color scanners has created the perfect market for an easy-to-use photo-manipulation application. Now, from Adobe, along comes PhotoDeluxe 1.0, a consumer-oriented image-editing package with a kiosk-style interface designed to hold novices' hands, carefully avoiding Photoshop's legendary learning curve. And unlike its professional-class sibling, PhotoDeluxe comes with a wide variety of templates, photo images, and clip art designed with the consumer in mind.

Keeping It Simple

Like Photoshop, PhotoDeluxe offers filters that can distort, sharpen, scale, and creatively manipulate photographic images; PhotoDeluxe lets you use existing Photoshop-compatible plug-ins, too.

PhotoDeluxe can capture documents directly from desktop scanners using its TWAIN acquire module or a Photoshop-compatible plug-in supplied by the scanner manufacturer; it also imports directly from Apple's QuickTake and Kodak's DC40 digital cameras. More important for small-office users, PhotoDeluxe can import and export a wide variety of formats, including Photoshop, GIF, JPEG, TIFF, PICT, EPS, BMP, and PCX—reason enough to warrant a purchase for some users.

At first glance, PhotoDeluxe's interface looks more like a computer game than that of a digital-image-editing application. When you launch PhotoDeluxe, it hides the Finder and fills the screen with its own desktop.

If you're familiar with the basics of image editing, you can work on your own, using traditional menus or a tab metaphor. Novices can use the Guided Activities feature to step through the various image-editing functions (see "At Your Service"). If you're familiar with wizards in Microsoft applications you'll be right at home with this step-by-step process, although Adobe makes it a bit more visually appealing.

Colorful icons help you select creative options. You can quickly frame your favorite photo, or easily transform it into a calendar or greeting card. PhotoDe-

luxe's CD also comes with various templates for creating flyers, signs, and even faux magazine covers.

The Hold Photo feature lets you composite photos, functioning as a sophisticated scrapbook. It can give you seemingly magical powers. Imagine your friends' surprise when Sasquatch crops up in your family portraits!

A Family Resemblance

The PhotoDeluxe design team took an enormous risk in deviating from Apple's rigid user-interface guidelines. For the most part, the colorful, user-friendly style works well, albeit in a cobbled-together manner. But in more than a few situations, PhotoDeluxe's lineage is all too apparent: Photoshop-esque dialog boxes rear their ugly heads when you access many tools. In another application, this



At Your Service Guided Activities walk you through the various steps to edit and manipulate your photo, and incorporate it into a creative project.

sort of code-borrowing wouldn't be as obvious, but these plain-Jane dialog boxes are a sharp contrast to the typically colorful look of PhotoDeluxe's interface. Even more disturbing, the tools still use Photoshop's cryptic methods, complete with terminology sure to confuse users unfamiliar with high-end techniques.

PhotoDeluxe's help system is also far from ideal. Unlike integrated systems in competing packages, the help system is a separate application called QuickHelp. Although the content is thorough, it's definitely not consistent with the graphical nature of the rest of the interface. If Adobe is serious about creating a true consumer-level product, it needs to adopt

a help system targeted to novice users, such as Apple Guide or balloon help. As an addition to QuickHelp, various hints—called clue cards—pop up during the editing process. Seasoned users can disable the clue cards, either individually or as a group. Still, it's a stopgap measure.

Sacrifice Play

Because PhotoDeluxe is geared to the consumer market, Adobe made a number of design compromises to make it usable on the low-powered, low-memory systems typically found in homes and small offices. Most notably, PhotoDeluxe doesn't offer the ability to work with multiple photos simultaneously.

Despite the sacrifices Adobe has made in the name of simplicity, you still need a CD-ROM drive and a 68040 processor to use PhotoDeluxe. And although the documentation recommends a memory partition of 8MB, test files caused the application to crash at this level. Increasing the memory setting to 12MB solved the problem—too bad most existing consumer Macs don't have that much RAM.

Adding insult to injury, PhotoDeluxe's performance is less than ideal on typical consumer-class systems. Some tools and filters are excruciatingly slow.

The Last Word

PhotoDeluxe isn't picture-perfect, but it is a suitable compromise between brute strength and grace. Its suite of tools is easy to use, and its templates are a welcome addition for home users who need a little creative boost.

PhotoDeluxe's low price and fun features make it a logical choice for the home user, but its flaws significantly limit its viability for business use. If you're using Photoshop simply as an import/export tool—and don't need color-separation capabilities or other high-end features—you'll benefit from PhotoDeluxe's lower price.—BLAKE ROBERTS

RATING: ★★★/6.3 **PROS:** Low price; easy to use; lots of templates; imports and exports most popular file formats. **CONS:** Cryptic Photoshop-style dialog boxes for some tools; weak help system; only one document can be active at a time; minimum system requirements too high for target market; sluggish performance. **COMPANY:** Adobe Systems (415/961-4400). **LIST PRICE:** \$129.

QuickDraw 3D Accelerators

THE MORE YOU SPEND, THE LESS YOU GET

BOY, ARE WE DISAPPOINTED. WITH QuickDraw 3D accelerator manufacturers promising "rendering speeds as high as 12 times faster" than unaccelerated rendering, we had visions of working exclusively with smooth Gouraud-shaded and texture-mapped 3-D models. But despite the hype, we found much more modest performance gains.

In the Lab

To display a 3-D object, your CPU calculates the object's geometry, converts it to triangles, and then rasterizes each triangle. A 3-D accelerator takes over the raster-

support texture mapping, why pay hundreds of dollars for a board that doesn't? Interestingly, combining the Matrox board with Apple's 3-D accelerator board improves rendering quality and restores texture mapping. (For more on the Matrox, watch for *Macworld's* review of PCI graphics cards in an upcoming issue.)

Apple's QuickDraw 3D Accelerator Card offers the lowest price with the best performance. It offered the smoothest images in the least amount of time. It's the only board we tested that supports transparency, constructive solid geometry (CSG), and alpha channels. Note that, unlike the Matrox and Yarc boards,

More-complex 3-D models need the features of an application like Infini-D or Studio Pro. Unfortunately, the more advanced your modeling needs, the less speed improvement 3-D accelerator boards provide. In real-world use, expect to continue working with bounding-box, wire-frame, and flat-shaded renderings. Even Apple's board performs slowly when previewing scenes with more than a few simple models. A 604 PowerPC Mac with QuickDraw 3D software is a better long-term investment. The scheduled spring release of QuickDraw 1.1 should improve 3-D hardware and software performance.

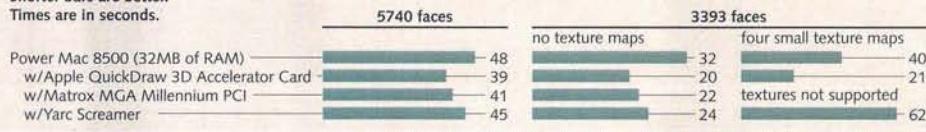
Finally, current 3-D boards don't increase ray-tracing speed or other mathematically demanding tasks. They don't claim to, but you should realize that generating final-quality Phong or ray-traced images for video, film, or print is still a time-consuming process.



Fast on the Draw?

Shorter bars are better.
Times are in seconds.

Time to complete five rotations of a Gouraud-shaded scene



terization process, freeing your CPU from this time-consuming task. The potential for improvements in performance can be seen using demonstration applications, such as Apple's Gerbils roller-coaster game.

Macworld Lab testing revealed that price and performance are inversely related. The most expensive board, the Yarc Screamer, generated barely noticeable speed gains and actually increased rendering times in our texture-map test. Furthermore, our Mac repeatedly froze during Yarc testing. According to the company, updated drivers and future products will remedy the problem, but for now we can't recommend this board.

The Matrox MGA Millennium PCI (\$649; 514/685-2630)—a QuickDraw 3D accelerator and graphics board—provided a moderate 10 to 20 percent speed improvement in our Gouraud-rendering test for QuickDraw acceleration. But the artifact-filled rendering and the board's inability to display a texture map negate its speed advantage. Since all Power Macs

Apple's board doesn't connect to your monitor. You must still use built-in video or an additional PCI monitor board to drive your monitor. But a single Apple 3-D board can accelerate 3-D rendering to multiple monitors.

Other Reasons to Wait

3D World 1.0 (from Microspot, 408/253-2000), our benchmark application, was built from the ground up around QuickDraw 3D. Heavy-duty 3-D applications Specular Infini-D 3.1 and Strata Studio Pro 1.75+ have features and data structures that these QuickDraw 3D boards don't accelerate. The same *Macworld* model that rotates smoothly in 3D World exhibits jerky motion in Studio Pro and Infini-D. Also, Studio Pro 1.75+ creates 3DMF files (QuickDraw's native file format) that are more complex than they need to be. (Brian Greenstone's shareware 3DMF Optimizer, available on AOL and on Macworld Online's Web site, optimizes complex 3DMF files for maximum speed and minimum size.)

The Last Word

If you have money to burn, consider selling your current machine and buying a 604-based PCI Mac. The 604 provides fast Gouraud shading and texture mapping, even without an accelerator. After you have a PCI Mac, buy 8MB of RAM to cover QuickDraw 3D's added system overhead. If you have money left over and you use Infini-D 3.1 or Studio Pro 1.75+ for hours at a time, consider Apple's board. QuickDraw 3D acceleration promises to improve the way you work with three dimensions. Save your money until it does.—JIM FEELEY AND DANNY LEE

QuickDraw 3D Accelerator Card

RATING: ★★★/5.0 **PROS:** Supports texture maps; outputs alpha channel. **CONS:** Minor speed gains with major 3-D applications. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** \$400.

Yarc Screamer

RATING: ★/1.9 **PROS:** Supports texture maps. **CONS:** Slower than no board in some instances; chokes on simple models. **COMPANY:** Yarc Systems (805/499-9444). **PRICE:** \$995.

Retrospect 3.0, Retrospect Remote 3.0

LEADING MAC BACKUP PROGRAMS NOW EVEN MORE POWERFUL, EASIER TO USE

DANTZ'S RETROSPECT AND ITS NETWORK-AWARE alter ego, Retrospect Remote, have long been the preferred backup programs in the Mac market. The latest version confirms Retrospect's dominance and leaves the competition in the dust.

The earlier versions of Retrospect were powerful but difficult to use. Dantz has resolved that shortcoming in version 3.0, which has a new tabbed-folder user interface that I find much easier to navigate; it lets you begin backing up with as few as three mouse-clicks. Dantz has also done away with the jargon that plagued previous versions of the interface and has rewritten the user manual to include more (and better) examples and tips. As before, Retrospect can use virtually any backup media, from tape drives to disks; now it can also use some recordable CD-ROM units for permanent archiving.

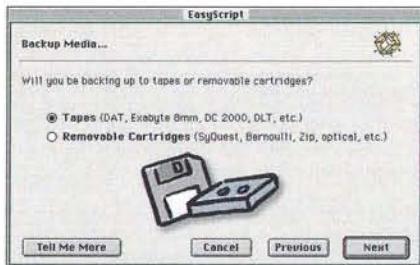
Retrospect 3.0 is single-user, while Retrospect Remote 3.0 adds the ability to back up client Macs to a central Mac over a network. (The base Retrospect Remote can handle 10 clients, with additional Remote Packs available in increments of 5, 10, or 50 users.) Both are Power Mac native, optimized for 604-based Power Macs. Macworld Lab tests show a performance increase of 10 to 15 percent over version 2.1. (Of course, the power of the hardware Retrospect is running on determines backup speed.) On my Power Computing Power 100, local performance was excellent; likewise, using Retrospect Remote, I backed up several client machines over a network with ease.

Although Retrospect is superb at backing up Mac-only installations, it still lacks a Windows client. Dantz expects to release one later this year.

Containers and Scripts

For local desktop and networked backup clients, Retrospect 3.0 uses *containers*, which hold the disk volumes to be backed up. For example, say you have two hard disks and a SyQuest drive attached to your Mac. With previous versions of Retrospect (and with all other Mac backup programs), a script would back up the contents of the SyQuest drive only if the

inserted cartridge was present when the script was created. When you tell Retrospect 3.0 to back up the entire local desktop container, it automatically backs up the hard disks and whatever cartridge is present. The program is smart enough not to back up floppy disks, mounted network volumes, or CD-ROMs (though you can back those up if you like). You can create folders within a container to orga-



When We Say Easy . . . With EasyScript, all you need to do is answer a few simple questions; Retrospect produces a complete backup script for you.

nize its contents, a boon for network managers who need to keep track of dozens or hundreds of remote clients. Managers can now organize remote clients into logical folders by department or any other grouping, rather than deal with a single, unwieldy scrolling list.

Creating backup scripts was difficult in earlier versions; many users simply threw up their hands at the dizzying number of options available. In 3.0, the new EasyScript asks you a few simple questions, then creates a custom script that includes scheduling and media rotation and suggests an offsite backup strategy.

Retrospect's Apple events support is excellent. Scriptwriters can now control virtually every aspect of Retrospect's operations, and Retrospect can trigger scripts. Dantz supplies several sample scripts, including one that works with Ex Machina's Notify to send a message to your pager alerting you that the tape drive contains the wrong tape.

Backup Server

The new Backup Server is reason enough to upgrade to 3.0, especially if you back up many Macs over a network. This special Retrospect script intelligently manages

your backup resources and the computers to be backed up.

After checking to see which backup media are available, Backup Server prioritizes the source volumes to be backed up, with the least recently backed-up disk at the top of the queue. It then polls the local machine and the network to see which source disks are available. Retrospect begins backups at the top of the queue, working its way down the list for however long you set Backup Server to operate. Remote users can request to be backed up as soon as possible, and PowerBook users can be backed up automatically on connecting to the network. Previously, sites with many networked clients couldn't always back up all their Macs in the time allotted (overnight, for example); administrators had to split remote clients into groups for backup on successive nights. The new Backup Server simply backs up as many remote clients as it can in the allotted time, then backs up the remaining clients on successive runs until it has backed up all the clients.

Backup Server is especially useful in conjunction with a multiple-tape DAT loader. This combination gives harried backup administrators maximum flexibility; they can insert tapes from several storage sets into the loader and let Backup Server switch automatically between sets as needed, even using blank tapes when necessary for media rotation.

The Last Word

Backup isn't an exciting subject for most people, and progress in this field tends to be slow and incremental. I commend Dantz for its innovation in creating Backup Server, which adds functions no other Mac backup software can match. There's no better program than Retrospect to safeguard your data.—TOM NEGRINO

RATING: ★★★★/8.9 **PROS:** Improved interface; better scripting; innovative Backup Server. **CONS:** No Windows client. **COMPANY:** Dantz Development (510/253-3000, sales@dantz.com). **LIST PRICE:** Retrospect \$249; Retrospect Remote (ten users) \$449.

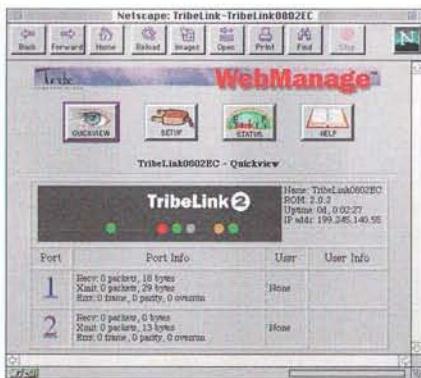
Remote-Access Servers

TWO LOW-END OPTIONS OFFER DIFFERENT STRENGTHS

AS A LONGTIME TELECOMMUTER who helps others do the same, I was happy to review two low-end remote-access servers for small-office telecommuters like myself. Sonic Systems' QuickStream/3 and Tribe Computer Works' TribeLink2 let remote users connect to an Ethernet network over telephone lines using TCP/IP or AppleTalk over PPP (Point-to-Point Protocol). For a charge, these servers also let local users dial out. Beyond these basic similarities, however, the products differ significantly.

These remote-access servers connect a LAN to the outside world through RS-232 serial ports, to which you can attach an asynchronous communications device—a modem or an ISDN terminal adapter (TA)—running at speeds of up to 115.2 Kbps. The QuickStream/3 has three serial ports, and the TribeLink2, two. The TribeLink2 uses plug-in serial interface boards that optionally support built-in V.34 modems or synchronous devices, such as a leased-line Data Service Unit (DSU), at speeds of up to 128 Kbps.

Setting up either device is simple. You install the management software, set serial-port and modem parameters, register users and passwords, and enable AppleTalk and/or TCP/IP. If you use TCP/IP, you assign the server an IP address and set other IP values, such as subnet mask and gateway address. Both companies take pains to explain TCP/IP, but Tribe's explanation is clearer by far. Overall, however, both user guides are excellent.



Web Approach You can manage the TribeLink2 via the Internet using Netscape Navigator.

You need to install PPP client software, which both companies supply, on the Macs that will be dialing in. Although you can use shareware PPP software, the bundled clients are easier to configure and support server-specific features. Sonic provides an unlimited-user client license, while Tribe includes a two-user license.

Unlimited client connections and a lower cost per port on the base unit (\$332 versus \$648) are the main advantages of the QuickStream/3 over the TribeLink2.



STEVE HATHAWAY

The QuickStream/3 (top) and the TribeLink2.

But Tribe's product has a slew of features not found on the QuickStream. For example, Tribe's server is a true IP router, so it can connect entire remote LANs to your LAN (using a remote PPP router or another TribeLink); the QuickStream/3 supports only single-user connections. And the TribeLink's synchronous-port option lets you use synchronous DSUs and ISDN TAs, yielding up to 40 percent higher throughput than asynchronous devices deliver. The TribeLink2 also has AppleTalk-zone and -device filtering, static and dynamic (RIP) IP routing, and a script language for customizing connections with non-Mac remote hosts.

But its most novel feature is WebManage, a built-in World Wide Web server that lets you administer the unit from any computer with Netscape Navigator. WebManage includes built-in documentation. A QuickView page summarizes port status and throughput statistics, and a Status page displays detailed status information, including TCP/IP routing tables, active sockets, and diagnostic logs.

Put to the Test

I connected Motorola BitSurfPro ISDN TAs to each port. Remote Macs dialed in

at 128 Kbps and simultaneously transferred 10MB incompressible JPEG image files. With the QuickStream/3's three ports operating at full speed, throughput dropped well below the maximum 115.2 Kbps—to less than 90 Kbps. The TribeLink2 suffered no such slowdown.

When difficulties arose, Tribe's server provided better problem-solving aids than Sonic's. The QuickStream/3 generates no diagnostic logs—not even error messages—making connection failures very difficult to track down. The QuickStream/3 reported simple problems, such as a password mismatch, with an ambiguous "Connection Failed, -1" message. In contrast, the TribeLink2 provides detailed logging on both ends of the connection, itemizing every step of the process and clearly noting the cause of failures. Unlike the QuickStream/3, the TribeLink2 can disconnect or give the end user a warning when a connection has been left up too long.

The Last Word

If you want to serve a small number of individual remote users and can live with the QuickStream/3's limitations, its lower cost per port may be a reasonable trade-off for features and usability. But if you plan to interconnect branch-office LANs, need true IP routing, or lack a remote technical staff, consider the usability, expandability, and speed of the TribeLink2. Both solutions are welcome additions to the network manager's stable of Mac-savvy products.—MEL BECKMAN

QuickStream/3

RATING: ★★★★/6.3 **PROS:** Low price per port. **CONS:** No diagnostic logs or messages; performance lags with three heavy users. **COMPANY:** Sonic Systems (408/736-1900, sales@sonicsys.com). **LIST PRICE:** \$995; dial-out option \$249.

TribeLink2

RATING: ★★★★★/8.2 **PROS:** True IP routing; LAN-to-LAN connections; Web-based administration. **CONS:** High price per port. **COMPANY:** Tribe Computer Works (510/814-3900, sales@tribe.com). **LIST PRICE:** \$1295; dial-out option \$200; additional PPP client licenses \$145 for 10 users to \$1495 for 500.

CommuniGate

INTEGRATED MESSAGING FOR MACS

Macintosh users typically meld together a motley crew of messaging applications—each with a different user interface, address database, and content capability—to send E-mail, faxes, print jobs, and electronic pages. Then the applications won't interoperate unless you spend considerable effort setting up gateways between them. Stalker's CommuniGate software addresses this problem by

The Client

The client is nicely Mac-like, letting you compose messages as styled text, with embedded graphics and sounds. Local recipients using CommuniGate receive messages with multimedia additions intact, but messages that you send via one of the Internet gateways lose all multimedia attributes, because the gateways don't support Multipurpose Internet Mail Extensions (MIME) for multimedia E-mail. Similarly, the software automatically converts attachments to the Mac-standard BinHex format, which is fine if the receiving machine is a Macintosh, but not so fine for non-Mac addressees. CommuniGate doesn't support the Internet-standard enclosure encoding called UUCode, so non-Mac correspondents will find your attachments inconvenient, if not impossible, to read. (For more on sending E-mail enclosures, see *Net-Smart*, elsewhere in this issue.)

The client supports most essential messaging functions: multiple recipients, groups, blind carbon copies, forwarding, and redirecting. Each user can create multiple local mail-

boxes and file incoming mail. A few valuable functions are missing, however: the ability to filter messages based on content; set priorities to make urgent messages more visible; automate replies; and sort related messages by attributes such as date, address, or subject.

Each user can have several address books, as well as access to shared ones on the server. Retrieving addresses is not as easy as it could be: you open the address book and select the recipients, then click on the To button to address your outgoing message. (Claris Emailer uses a better approach: type a few letters of the recipient's name in the To field, and the closest match appears automatically.)

Heaven's Gateway

The optional gateways operate in demo mode until you buy a module and obtain

a keycode that enables full functionality. You can send messages to any of the modules directly, using an address that provides a destination pager ID or phone number, the optional service name, and the gateway (*12345%Airnote@PagerGate*, for example). An intergateway routing function transfers messages between gateways, so you can route incoming E-mail to a pager or incoming faxes to a printer. Users can fax from any application via a Chooser extension.

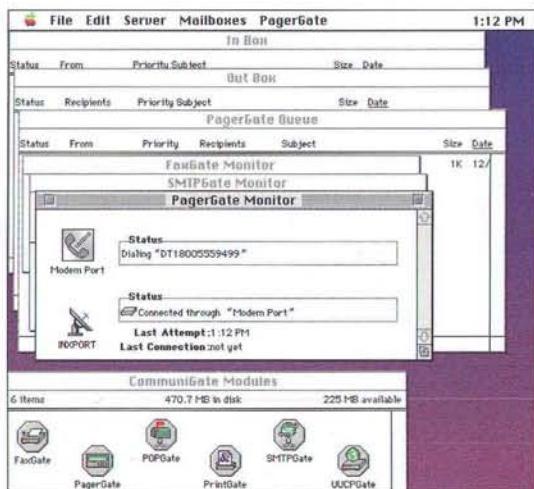
Several miscellaneous features top off CommuniGate's eclectic capabilities. You can create custom fax cover sheets; guest users can read their mail from another user's Mac; and the server stores standard attachment files, making it easy to send boilerplate documents, such as product specs.

Running native on a Power Mac, CommuniGate is fast, both as a server and as a client. Excellent message logging and diagnostics simplify identifying problems.

Pricing has a complicated, à la carte structure. The server and local E-mail gateway with 5 client licenses is free. Each additional 25 licenses cost \$200; an unlimited-user license is \$600. Each gateway costs \$100 and runs only on one server, so running multiple servers (for example, with branch offices) requires purchasing multiple copies.

The Last Word

CommuniGate is priced cheaply enough (free is cheap indeed) that small workgroups can easily afford it, yet its extensible client-server architecture makes it flexible and robust enough to use even in large corporate settings. Stalker has at least one additional gateway module, for voice mail, in the works. If you need a wide range of messaging capabilities, and can live with CommuniGate's limitations, this product is a winner.—MEL BECKMAN



Deliver Pages and Faxes CommuniGate's extensible messaging architecture includes gateways for paging and faxing from any computer with the CommuniGate client.

combining modular gateways with a cohesive client that gives you all this messaging functionality from one interface.

The CommuniGate server software runs in the background as an extension on a local AppleTalk-connected Mac, which must be running all the time. The client software originates and receives messages. The server includes a local-mail gateway, and there are six optional gateways—for POP, SMTP, and UUCP Internet mail protocols, as well as for faxing, printing, and paging.

The CommuniGate software and documentation come on one disk. The documentation is well organized, by function, as separate SimpleText files; but it has no index and suffers from a total lack of illustrations, which makes setup and operating procedures tedious to follow and difficult to perform correctly.

RATING: ★★★★/8.0 **PROS:** Well-integrated modules; multimedia message contents; Internet, fax, print, and pager gateways; inter-gateway routing; excellent message logging. **CONS:** Incomplete documentation; no message filtering; no MIME or UUCode support; unsophisticated messaging and addressing features. **COMPANY:** Stalker Software (415/383-7164, sales@stalker.com). **LIST PRICE:** Free for 5 users; 25 users \$200; unlimited users \$600; gateway modules \$100 each.

Business Card Scanners

SCANNERS DON'T DELIVER ON PROMISE

MY DESK DRAWERS ARE constantly littered with business cards, so I was thrilled when I got to review three scanners—the VIP Scan, Biz Card Reader (BCR), and Biz Card Manager—that would let me transfer card information to my Mac automatically. After trying them for a few weeks, though, I've decided to stick with the old-fashioned method of entering data manually.

Almost Identical

With the exception of a few cosmetic differences and the lack of an on/off switch on the Umax BCR, all three scanners are identical inside and out. An AC adapter

with specialized database applications that resemble contact managers, with fields for names, addresses, phone numbers, and other demographic information. (Two of the scanners—La Cie's VIP Scan and the BCR—even use the same proprietary scanner software.) All three programs let you print and export contact information in a variety of formats. The BCR and the VIP Scan also support automatic data transfer to Now Contact or Symantec's ACT using AppleScript, and La Cie's scanner comes bundled with a copy of Now Contact. (The VIP Scan I tested came with version 3.0; La Cie plans to ship version 3.5 when the current inventory runs out.)

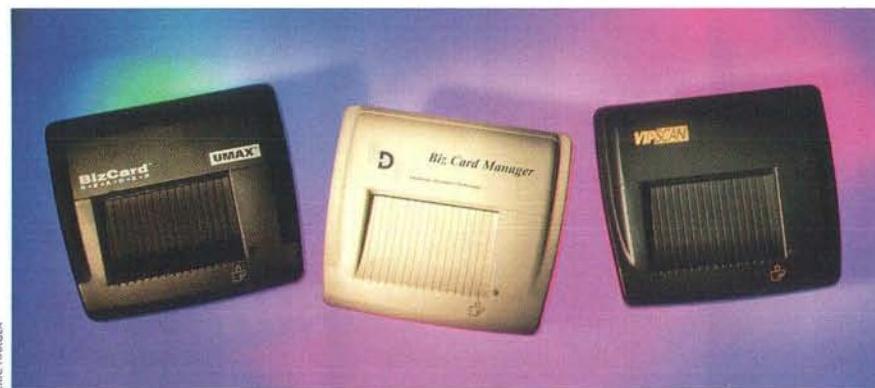
prisingly, accuracy was highest on cards with plain, clearly separated text. Cards with stylized fonts or with company logos superimposed over text didn't fare nearly as well, and none of the scanners made any sense of a card with yellow text on a dark blue background.

As expected, the BCR and the VIP Scan performed almost identically, taking an average of about 30 seconds to scan and interpret each card. The Biz Card Manager was a little faster, averaging about 26 seconds per card, but it was slightly less accurate than the other two. All three scanners made at least a few mistakes on almost every business card, though, forcing me to proofread the information carefully.

The Last Word

Given the endless variety of card styles in circulation, it's amazing that these scanners work at all. But in the business world, where a single missing letter or misplaced digit can spell disaster, only perfection will do. In the time that it takes to scan a card and make any necessary corrections, you can usually type the information yourself. Without significant improvements to the scanners' optical character recognition software, I can't recommend them.—FRANKLIN TESSLER

ERIC HARGER



Three business card scanners: the Biz Card Reader from Umax Technologies (left), the Biz Card Manager from Electronic Document Technology (center), and the VIP Scan from La Cie (right).

supplies the power, and a green indicator light on top of each scanner glows when the scanner is on. One particularly annoying feature is the nonstandard SCSI connector, which forces you to use a special (supplied) cable to connect the scanner to your Macintosh. The other end of the cable sports a 25-pin plug that is incompatible with most other SCSI devices. Even with a 25-to-50-pin adapter—and only the BCR ships with one—the scanner has to go at the end of the chain. I also ran into problems getting my Power Macintosh 7500 to work consistently with any of the scanners. Even after I disconnected my only other SCSI device, the scanner software would sometimes recognize the scanner only after I cycled the power off and on.

All the business-card readers come

To scan a card, you place it facedown on top of the scanner and click on a button; you can also set the VIP Scan and BCR to scan automatically as soon as you insert a card. It takes only a few seconds for the card to pass through the scanner and the optical character recognition (OCR) engine to kick in. (All three scanners also support a deferred-recognition mode that lets you scan a series of cards and batch-process them later, but you can still load only one card at a time.)

The OCR software tries to interpret each item of text and insert it into the correct field in the database. Leftover information that can't be classified gets tossed into a separate notes field. After tweaking the scanners' settings for best performance, I tested them with an eclectic assortment of business cards. Not sur-

Biz Card Manager

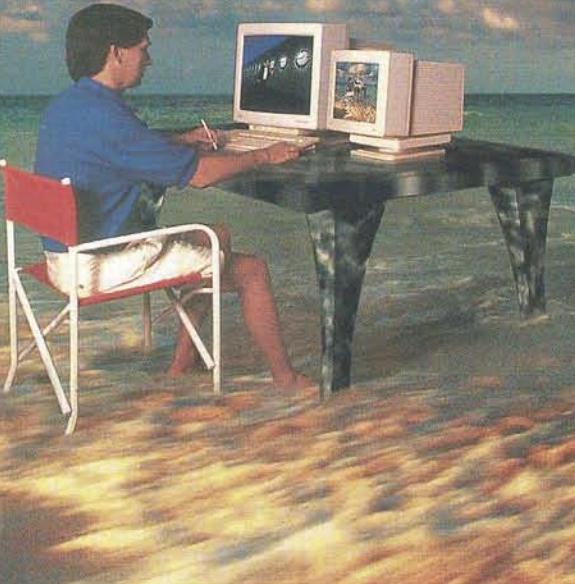
RATING: ★★/3.7 **PROS:** Slightly faster than the other card scanners. **CONS:** More expensive; no automatic scanning or data transfer to contact managers; makes more errors. **COMPANY:** Electronic Document Technology (408/733-7309, ops@edti.com). **LIST PRICE:** \$369.

Biz Card Reader

RATING: ★★/3.7 **PROS:** Scans automatically; exports data to contact managers. **CONS:** Nonstandard SCSI connector; no on/off switch. **COMPANY:** Umax Technologies (510/651-8883). **LIST PRICE:** \$245.

VIP Scan

RATING: ★★/3.8 **PROS:** Scans automatically; exports data to contact managers; includes Now Contact. **CONS:** Nonstandard SCSI connector. **COMPANY:** La Cie (503/520-9000). **LIST PRICE:** \$199.



Supra has a better way to go global.

SUPRA. The high-performance modem with the right price.

◆ The choice is clear—Supra offers a lot more modem for your money. The new SupraExpress™ 288 delivers all the performance you need to access the Internet, transfer large files and fax from your desktop—at a price you can afford. What's more, Supra offers

dependable solutions designed exclusively for the Mac, superior engineering, and top-rated software.

◆ Included with all Supra modems, FAXcilitate fax software makes faxing quick and easy. One-step access to a powerful fax menu makes FAXcilitate

more intuitive than other fax software.

Plus, FAXcilitate now offers PowerMac native operation and true gray-scale faxing.

◆ So, whether you want to send a fax around the world or explore the Internet, Supra has a better way to go global.



SupraFAXModem™ 288



SupraExpress™ 288



Accelerated for
Power Macintosh

Features & Price Comparison	SupraFAXModem288	SupraExpress288	Global Platinum
28,800 bps(V.34) max data speed	■	■	■
115,200 bps max throughput	■	■	■
Up to 14,400 bps fax capability	■	■	■
Voice/fax line sharing	■	■	■
Data comm software	Microphone LT	Microphone LT	Shareware
Serial port enhancer software	■	■	■
CompuServe® Information Manager	■	■	■
Caller ID	■	■	■
5-Year limited warranty	■	■	■
Durable aluminum case	■	■	■
Flash ROM	■	■	■
Alpha-numeric display	■	■	■
Fax software	FAXcilitate	FAXcilitate Lite	GlobalFax
One-step access to FAX menu	■	■	■
Apple Script support	■	■	■
Estimated Retail Price	\$229	\$169	*\$209

For more information or the dealer nearest you, call **1-800-934-8772**.

24-Hour Fax-Back: 541-967-0072 ◆ Internet: <http://www.supra.com>

SupraExpress™ 288 and SupraFAXModem™ 288 are registered trademarks of Diamond Multimedia/Supra Communications Division, 312 SE Stonemill Drive, Suite 150, Vancouver, WA 98684. All other trademarks are the property of their respective owners. *Estimated mail order price Dec/Jan '96 MacWarehouse.

DIAMOND
MULTIMEDIA
SUPRA COMMUNICATIONS DIVISION

Tax-Prep Programs

THREE PROGRAMS UNTANGLE KNOTTY TAX LAWS

EVERY YEAR, TAXPAYERS' DREAMS of single-page tax returns that take just minutes to complete seem less and less likely to come true. This year is no exception; you can expect more forms and regulations than ever. If you've decided it's time to switch from the pencil-and-calculator method to software that does the organizing and calculating for you, you have three programs to choose from. They range from the sophisticated MacInTax Deluxe—a CD-ROM complete with built-in help and QuickTime videos—to the practical, nonsense Kiplinger TaxCut to the minimalist Personal Tax Edge. (The head-start versions reviewed here let you plan and preview your return, but only the final versions—which aren't generally available until late January—contain the complete set of IRS-approved forms required for filing.)

Despite their divergent interfaces, the programs share some basic features. If you know your way around a tax return, you can enter information directly into electronic tax forms. Each program can also act as a virtual tax preparer, interviewing you and recording the information on worksheets and on the actual return. All the programs check returns for errors and missing information, flag potential trouble spots that could attract an auditor's attention, and offer financial-planning advice. If you need help using the programs, telephone support is available (though tax advice is not). When you're finished, you can either print your completed return and mail it yourself or

send it to the publisher of the program for electronic filing.

All three companies have Web sites that may help you decide on a program or get assistance once you've started preparing your taxes. For more informa-

A Face Only a DOS User Could Love Parsons' Personal Tax Edge comes across as a quick Mac port from the DOS platform.

tion on TaxCut, point your browser at <http://www.conductor.com/>; for Personal Tax Edge, go to <http://www.parsonstech.com/>; and for MacInTax, see <http://www.intuit.com/turbotax>.

Kiplinger TaxCut

Kiplinger TaxCut from Block Financial Software may lack the extensive built-in help resources of MacInTax Deluxe, but its interview process is first-rate. For example, it helps you figure out if you can take a home-office deduction, then holds your hand as you calculate how much you can deduct.

Although the program isn't Power Mac native, TaxCut is speedy enough that you won't be disappointed; however, when I used it on my 80MB Power Mac 9500/120 (with Virtual Memory off) I got a low-memory message and had to allocate a larger partition. More frustrating is the lack of state modules: although you can get Windows versions for more than half the states that tax income, Macintosh users are limited to modules for California and New York. And TaxCut's written documentation is bare-bones; you'll have to rely on the built-in help if you have a problem.

Simple Elegance Kiplinger TaxCut has a handy question-and-answer feature that makes completing your return a breeze.

Personal Tax Edge

Parsons Technology's Personal Tax Edge has "fast PC port" written all over it, with unsophisticated graphics and blocky text that bring to mind a low-cost DOS program. *Minimalist* charitably describes the built-in help, and the interview feature isn't terribly comprehensive—it asks some basic questions, then presents you with a tax form and leaves you to complete the form on your own.

Although the interface may put off some users, Personal Tax Edge produces high-quality printed forms comparable to those of the more expensive programs. If your tax returns are simple or you're a master of tax preparation, the lack of extensive built-in assistance won't be a drawback. And Parsons offers a state-tax package for every state that collects income tax, something even TaxCut has yet to offer.

MacInTax Deluxe

MacInTax Deluxe, currently the only CD-ROM-based tax program for the Mac, has enough QuickTime videos and built-in documentation to guide you easily through the complexities of tax forms. (You can also get the guts of the program, minus the extensive built-in help, on disk.) State modules are available for all states that collect taxes.

The MacInTax interview process is a marvel of simplicity. The program presents each question in clear language, and you can click on an underlined phrase to get additional information on that topic. QuickTime videos complement some



A Tax Library at Your Fingertips MacInTax Deluxe offers QuickTime movies with useful tax tips as part of its Navigator interview feature.

questions; you can also click on an icon within the program to get help from IRS tax publications or the two built-in books offered with the program. MacInTax can even calculate your deduction in different ways so you can choose the method that yields the biggest tax break.

MacInTax is loaded with thoughtful

features; for example, it offers to save your work whenever you move from one topic to another. The only negatives are that previous final versions have shipped late and with bugs, and customer service tends to be scarce as April 15 approaches.

The Last Word

Any of these programs will help you prepare a clean, accurate tax return. If your tax picture is relatively complicated, though, you need software that guides you through the rough spots simply and intelligently. Parsons' Personal Tax Edge yields respectable results but doesn't do much hand-holding along the way; Kiplinger TaxCut, with its easy-to-use interface and elegant organization, has much to offer but lacks a complete set of state versions.

Of the three programs, MacInTax Deluxe is the clear winner; it not only guides you effortlessly through the tax-return minefield but gives you a wealth of helpful advice on financial planning. When it's time to wade through this year's jumble of forms and regulations, that's the program I'll be using.—GENE STEINBERG

Kiplinger TaxCut

RATING: ★★★★/7.1 **PROS:** Easy-to-use interview feature; well-organized built-in help. **CONS:** Minor memory problems with Power Macs; state versions only for California and New York. **COMPANY:** Block Financial Software (816/751-6000). **LIST PRICE:** \$39.95; state modules \$24.95.

MacInTax Deluxe

RATING: ★★★★/8.6 **PROS:** Powerful built-in help; simple yet comprehensive interview process; informative QuickTime video help; modules for all states. **CONS:** History of customer-support problems and bugs; somewhat memory-intensive. **COMPANY:** Intuit (520/295-3110). **LIST PRICE:** \$49.95; state modules \$25.

Personal Tax Edge

RATING: ★★★/5.2 **PROS:** Easy to use; high-quality printed forms; modules for all states. **CONS:** DOS-inspired interface; minimal built-in help; memory-hungry. **COMPANY:** Parsons Technology (319/395-9626). **LIST PRICE:** \$19; state modules \$19.

Mediagnügen 1.0.1, ProView 1.1

BARE-BONES TOOLS FOR SIMPLE MULTIMEDIA PRESENTATIONS

TAKE THE CONCEPT OF MULTIMEDIA authoring, strip it to its essence, and you're left with ProView and Mediagnügen. These no-frills tools let you combine graphics, sound, and QuickTime movies into basic interactive presentations, but they lack many of the features needed to produce polished, professional results.

ProView 1.1

ProView lets you create and freely distribute simple, slide-show-style presentations that are either self-running or interactive. It takes almost no time to learn; creating new pages, adding media elements, and creating button links to other pages are simple and intuitive.

Unfortunately, a sparse feature set seriously limits ProView's usefulness. The program supports only PICT and JPEG graphics; you're limited to a palette of 11 colors; you can't import text from other programs; and ProView lacks drawing tools entirely. While the button links make it easy to navigate a presentation, no transitional effects are available; ProView simply cuts abruptly from page to page. (E-magine promises to fix many of these problems in the next release.)

Finally, ProView is prone to lockups and crashes when individual pages contain multiple PICT images. ProView documents with embedded QuickTime movies also cause the application to crash.

Mediagnügen 1.0.1

Mediagnügen is even more limited than ProView. Although the documentation says the program can be used for electronic presentations and slide shows, Mediagnügen is essentially just a multimedia browser. It lets you load and view any combination of graphics and QuickTime movies; you can also import sounds and listen to them within the browser.

One of Mediagnügen's functions is to create catalogs of up to 13,000 files. You can catalog a CD-ROM of clip art, for example, then view thumbnails of the images without rereading each one from the CD.

Mediagnügen is riddled with problems, however. The program supports PICT and JPEG images, but not TIFF, GIF, EPS, or Photo CD files; browsing

tools are extremely limited; you can sort items only by name, not by size or type; and you can't add notes to images. (Gnügen says a future version will support additional file formats and search criteria.) The main viewing interface is awkward, and the documentation consists of a single sheet of paper. Even worse, in a catalog you can't add or remove an individual file, nor can you shift-click multiple images to copy them to an archive.



On Stage Buttons below the Mediagnügen "stage" let you move from image to image, copy images to a new catalog, or run a slide show.

The Last Word

While ProView is a cheap, simple way to create a self-contained, self-running app, Mediagnügen is almost useless as a browser; it lets you view and copy image collections, but doesn't give you the tools to organize and sort them. Even at under \$30, it isn't all that useful.—JOSEPH SCHORR

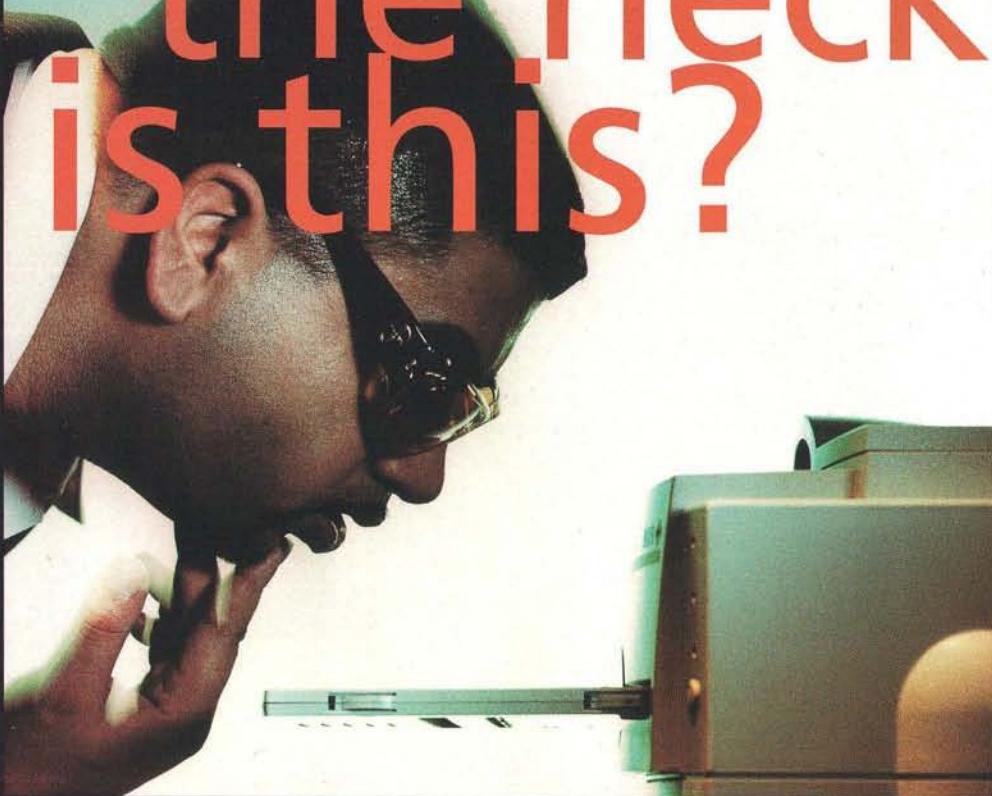
ProView 1.1

RATING: ★★/4.0 **PROS:** Simple to use; includes viewer application. **CONS:** Can't import text; no drawing tools; supports few file formats and colors; occasionally unstable. **COMPANY:** E-magine (818/881-4757, e-magine@panix.com). **LIST PRICE:** \$69.95.

Mediagnügen 1.0.1

RATING: ★★/3.5 **PROS:** Can put 13,000 images in each catalog. **CONS:** Supports only PICT and JPEG formats; can't sort images by size, type, or keyword; can't add or remove individual files; poor interface design. **COMPANY:** Gnügen Software (303/682-5380). **LIST PRICE:** \$29.98.

What the heck is this?



A DuoScan[®], they tell you. A desktop scanner with two loading areas? A two-bed scanner? Yes, they say. So you can load transparencies while you scan reflective art. And with a dedicated bed for each, you can get better scans from both. Then you look at the dynamic range. And you look at the resolution. And the speed. And then you know exactly what it is. It's something that's going to make your life a lot easier.



The new Agfa DuoScan with TwinPlate™ Technology. Exclusive dual scanning bed design for increased accuracy and productivity. 36-bit scanning of up to legal size for reflective, letter size for transmissive. Dynamic range: 3.3D. Resolution: 2000 X 1000 ppi. Line time: 7.7 ms/line, full color. Previews in under 10 seconds. Batch slide holders optional.



Comes complete with full Adobe Photoshop™ 3.0, Agfa FotoTune™ color management and FotoFlavor™ color correction software.

For the Agfa DuoScan dealer nearest you, call 1-800-685-4271, ext. 5643. In Canada, please call 1-800-268-1331, ext. 4032. www.agfahome.com

Agfa Division, Bayer Corporation, 100 Challenger Rd., Ridgefield Park, NJ 07660.

The following AgfaType™ fonts are used in this ad: Frutiger, Sabon and ITC Zapf Dingbats.

AGFA and the Agfa rhombus are registered trademarks of Agfa-Gevaert AG. DuoScan is a registered trademark and TwinPlate Technology, FotoTune, FotoFlavor and AgfaType are trademarks of Agfa-Gevaert N.V. Photoshop is a trademark of Adobe Systems Inc., which may be registered in some jurisdictions.

Circle 158 on reader service card

WHAT DO
YOU SEE?

AGFA 
The complete picture.

KPT Final Effects 3.0

SUPERB EFFECTS LIBRARY FOR ADOBE AFTER EFFECTS

MEATATOOLS' KPT FINAL EFFECTS 3.0 is a library of plug-in modules that adds 28 film-quality effects to Adobe After Effects, one of the digital-video world's favorite effects programs (see *Reviews*, March 1996). Final Effects taps directly into After Effects' video-altering engine and adds new effects and transitions to After Effects' Filter menu.

The Final Effects library breaks down into eight categories: distortion, channel, image control, light, particle, perspective, stylize, and transition. The seven distortion filters let you, among other things, slant movies or images, create slanted drop shadows, cut an image into animated squares, and create a vortex effect. Several image-control and channel filters make it easier to create image masks; they also let you composite two images in a single layer, something After Effects can't do on its own.

Final Effects also adds several new transitions, including a gorgeous 3-D page peel (see "Video with a Peel"), two types of wipes, and Twister, in which an image twists as if it's being wrung out. New filters in-



Video with a Peel The Page Turn filter creates gorgeous page-peel transitions. As with all Final Effects plug-ins, you can fine-tune the transitions' characteristics in After Effects' Effect Controls window.

clude Sphere, which projects an image onto a sphere whose surface properties and illumination you control; Scatterize, which creates an exploding image; and Kaleida, which reflects an image for a kaleidoscope effect.

In the particle system, nine filters create everything from starbursts and bubbles to rain and flames. You have full control over the particles' attributes: how often new particles spew from a source, their size, when they disappear, how their colors change over time, and more.

Unlike some third-party effects plug-ins, the Final Effects filters are tightly integrated into After Effects. You can animate

the effects over time by creating keyframes in After Effects' Timeline window; with the Rain particle generator, for example, you can create a gentle drizzle that gradually turns into a windblown downpour. You adjust filter settings in After Effects' Timeline window or its new Effect Controls window.

The plug-ins' rendering quality won't disappoint After Effects veterans. Clips rendered with Final Effects' 3-D filters have a particularly rich appearance. And while some plug-in collections include bizarre, gimmicky transitions you'd rarely use, the Final Effects library contains nothing but genuinely useful effects.

The Last Word At \$695, Final Effects is on the pricey side—the base version of After Effects 3.0 itself sells for only a bit more. But the price is justified, given the fact that Final Effects delivers results normally associated with seven-figure video workstations. If you work extensively in After Effects, your system isn't complete without Final Effects.—JIM HEID

RATING: ★★★★/8.9 **PROS:** Excellent rendering quality; tightly integrated into After Effects 3.0; useful selection of effects. **CONS:** Expensive. **COMPANY:** MetaTools (805/566-6200, metasales@aol.com). **LIST PRICE:** \$695.

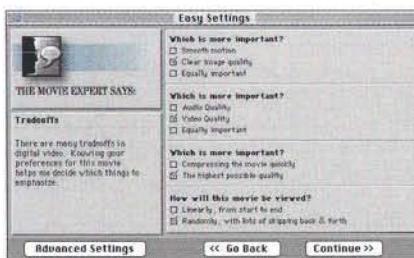
Movie Cleaner Pro 1.1.1

QUICKTIME-COMPRESSTION UTILITY FOR CRISP CD-ROM MOVIES

ONE OF THE MOST IMPORTANT steps in producing QuickTime movies for CD-ROM is compressing them so they'll play smoothly from a relatively slow storage device. Unfortunately, a movie that starts out crisp and clear can look chunky and pixelated after compression. Multimedia developers use blurring, cropping, and scaling to minimize artifacts, but these tricks require a shelf full of software and dozens of steps.

Software developers are coming to the rescue with utilities that streamline compression. Two such products are Adobe's CD-ROM Movie Maker plug-in for Adobe Premiere (see *Reviews*, March 1996) and Terran Interactive's Movie Cleaner Pro, a stand-alone application. While Movie Cleaner combines essential compression features with an appealing interface, it falls short of the Premiere plug-in in some areas.

Like CD-ROM Movie Maker, Movie Cleaner has a blur option that softens edges



Make Me a Movie The Movie Expert feature asks you about the movie and compresses accordingly.

and de-emphasizes video noise for cleaner compression. But Movie Maker's additional blurring options can yield better results with movies containing lots of video noise.

Both utilities can attach a custom color palette (used on computers with 256-color video circuitry) to a movie, but CD-ROM Movie Maker can actually generate the palette's colors; with Movie Cleaner, you create the custom palette in a separate program, then import it into Movie Cleaner.

CD-ROM Movie Maker also has better support for keyframes. Although Movie Cleaner lets you specify the number of keyframes per second, Premiere also lets you control where they appear—a distinct advantage if you're creating interactive movies whose starting places depend on a user's actions. Movie Cleaner also lacks a

data-rate analysis window that predicts how a movie will tax a CD-ROM drive.

Movie Cleaner Pro does have its strengths, though. A unique filter eliminates the annoying dancing pixels that often appear in otherwise static areas of a shot, but the program's primary advantage is a highly interactive operating style. For example, you can pause a compression at any time and compare the before and after versions using a split-screen window. Terran Interactive also has a good customer-service record and makes updates and a shareware version available on its Web site (<http://www.terran-int.com>).

The Last Word If you're a seasoned compressionist who lives in Premiere 4.2, you may not need this product. But if you use another video-editing package, are new to compression, or simply want to add to your toolbox, I recommend Movie Cleaner Pro.—JIM HEID

RATING: ★★★★/6.5 **PROS:** Excellent interface; supports batch compression; unique filter options; reasonably priced. **CONS:** Few blurring options; limited control over keyframes; no data-rate analysis window; can't generate custom palettes. **COMPANY:** Terran Interactive (408/353-8859, info@terran-int.com). **LIST PRICE:** \$129.

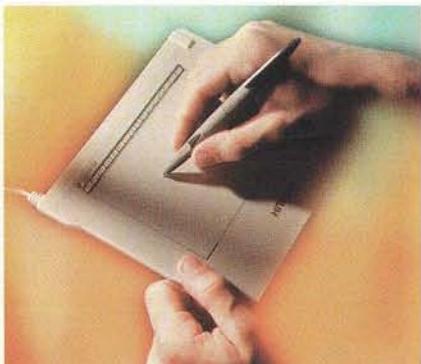
Hitachi StudioPad

GRAPHICS TABLET FOR TIGHT QUARTERS

PRESSURE-SENSITIVE GRAPHICS tablets are the best way to draw and paint on the Mac, but they can be bulky. If you're cramped for desk space, the Hitachi StudioPad offers a compact solution. The 7.5-by-6.6-inch StudioPad takes up less space than the average mouse pad. It includes a cordless pressure-sensitive stylus and 15 user-programmable buttons above its 4-by-5-inch work area. It's similar in size and shape to the Wacom ArtPad, a smaller version of the ArtZ II (see *Reviews*, December 1995).

Installation is simple: the StudioPad connects to your Mac's ADB port; a pass-through plug lets you attach the pad between other devices, such as the keyboard and mouse. The sturdy pad has nonskid feet, but it's so light you'll probably keep it in your hand as you draw. A plastic overlay provides a smooth drawing surface and lets you secure small images for tracing.

The battery-powered cordless stylus, with one user-definable barrel button, is about the size and weight of an expensive ballpoint pen. A pocket clip completes the metaphor. To extend battery life, the stylus



graphical controls. But overall, the software is easy to use and works well.

Programming the StudioPad's function buttons is especially easy. You simply click on radio buttons for function keys—control, ⌘, shift, option, or caps lock—and type a keystroke in a dialog box for each pad button. Unfortunately, you're limited to keyboard sequences; the StudioPad does not accept macros created with third-party utilities, like CE Software's QuicKeys or Tempo II from Affinity Microsystems.

Can you draw with a tablet this small? Amazingly, yes. Even though I'm used to having more room, I adapted easily. Your own work habits and preferences dictate which size tablet is best for you. Test driving before purchase is always a good idea.

The Last Word The StudioPad is a well-designed graphics tablet with excellent, pressure-sensitive operation. It's a good choice for illustrators with cluttered desks and artists working in cramped garrets.

—CARLOS DOMINGO MARTINEZ

RATING: ★★★★/7.5 **PROS:** Small size; excellent pressure sensitivity. **CONS:** Tablet buttons do not accept macros from third-party utilities. **COMPANY:** Hitachi Digital Graphics (408/747-0777). **LIST PRICE:** \$199.99.

MailKeeper 1.0.2

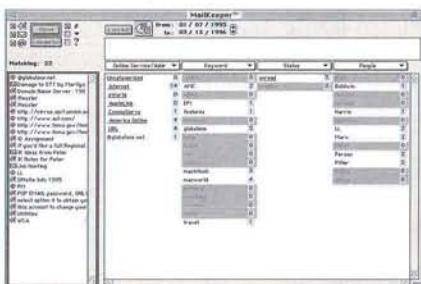
QUICK ONLINE INFORMATION DATABASE

SOME DAYS, IT'S A CHALLENGE just to read all my E-mail messages, let alone remember what's in them. MailKeeper helps me make sense of the seemingly endless data flow.

Rather than acting as a simple E-mail repository, as its name implies, MailKeeper is actually a specialized database designed to consolidate and organize a variety of data, including electronic-mail addresses, free-form notes, text clippings, and of course, E-mail messages. MailKeeper recognizes Internet URLs (Uniform Resource Locators), as well as America Online, AppleLink, CompuServe, eWorld, and Internet mail addresses. Currently there is no way to make MailKeeper aware of other address formats, and you still need a separate application to retrieve your E-mail.

Saving information to MailKeeper is a simple proposition. When you come across text that you want to save, you highlight it, copy the selection to the Clipboard, and enter a hot-key sequence to send the item to MailKeeper; MailKeeper must be running for the transfer to occur.

You assign archived items to one or



Information Categories As you click on categories, MailKeeper displays matching database entries.

more content categories, either as you import them or at any other time. The program comes with eight predefined categories, but you can add as many as you need. MailKeeper names items automatically or lets you append a name to the text before you import it. The subject field becomes the item name for E-mail in a format that MailKeeper recognizes.

MailKeeper displays four category columns at one time (see "Information Categories"). You can customize the column headers and move categories from one column to another by dragging. To search for stored items, click on the categories that you're searching in and MailKeeper displays a list of matching entries.

A feature called Guided Information

Access automatically hides irrelevant categories during searches; MailKeeper shows only those categories that share items with selected categories. As you click on more categories, the columns shrink, making it easier to find what you want. MailKeeper also lets you look for items by content, but searching isn't as fast.

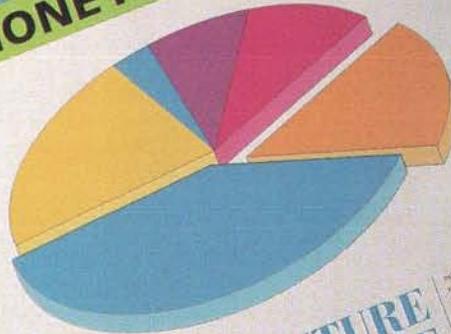
The Last Word Getting comfortable with MailKeeper's approach takes some time, and its Common Ground-based electronic manual doesn't include enough practical examples. MailKeeper also suffers from a few interface quirks: you can add only seven categories at a time—the Add Category dialog box has only seven spaces—and you can't adjust category column widths. I'd also like to be able to import messages into MailKeeper without selecting and copying text. Still, the first release of MailKeeper is worthwhile if you have a large volume of electronic data to contend with. With a few improvements, MailKeeper could become a truly indispensable tool.—FRANKLIN TESSLER

RATING: ★★★/5.0 **PROS:** Inexpensive; fast category searching. **CONS:** Needs better integration with mail programs; minor interface problems. **COMPANY:** Nisus Software (619/481-1477, info@nisus-soft.com). **LIST PRICE:** \$35.

Finest. Sharpen your color images and text to 1200 x 1200 dpi.

Easiest. Save time with PhaserShare™ connectivity, PhaserLink™ remote control, and high-capacity trays and toners.

FOR INVESTORS AND PORTFOLIO MANAGERS
MONEY MATTER\$



DEBENTURE ADVENTURE

...a modern diet, with more protein and less fat, will help you lose weight and feel better. But there are other ways to combat health problems, certain steps can be taken. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

...and so on. This section of the magazine features a variety of articles on topics such as nutrition, fitness, and personal finance. ...

WESTPORT NATIONAL BANK

Color is color, unless time is money.

Reach for the new Phaser® 550 Color Laser from Tektronix. It whips through your workgroup's workload at 5 color pages a minute, 14 pages in black. It sharpens your image to a new dimension: 1200 x 1200 dpi, giving documents a razor-sharp edge over the competition. Text is crisp. Transparencies bright. Color blends are smooth and consistent. Color photos? Knock-outs.



Connectivity is a snap, too, for PCs, workstations, Macs or any network. High-capacity features make high volume Adobe PostScript jobs a breeze. A standard web browser can manage it remotely. The Phaser 550 is supported by Tektronix, a Fortune 500 leader in workgroup color printers for 14 years. The price is right. The time for color is now. Just reach out and take it.



Phaser 140



Phaser 240



NEW Phaser 340



NEW Phaser 550



Phaser 440



NEW Phaser 480X



Phaser 300i

Call 1-800-835-6100, Ext. 1265
<http://www.tek.com/CPad?1265>

Tektronix

Circle 143 on reader service card

Descent 1.0

WHICH WAY IS UP?

DOES A SHOOT-'EM-UP ADVENTURE have to include lots of blood and mayhem to be fun? Looking at the current crop of games, you might think so. Luckily for the squeamish, Descent changes all that. There's no carnage in this game; your opponents are asteroid-based mining drones. Your mission is to rescue hostages, destroy a power reactor, and get out of the mine before it explodes.

Descent's most stunning innovation is its 360-degree, 3-D maneuverability. Mine shafts head off in all directions, and you quickly lose the concept of "up." You hurtle through shafts, shoot robot drones, and replenish your supplies.

As you maneuver your fighter craft through the mine, it bobs slightly as if on a cushion of air. You actually feel as if you are floating gravity-free. Sounds come from all directions, making for a realistic experience. As your skills improve, the mining robots learn to outwit you, adjusting strategies based on your movements.

In addition to single-player options, Descent offers an anarchy mode in which every person fends for him- or herself, or a



Daring Rescue You've found the hostages. Now you have to get them out alive.

collaborative mode in which players team up against the robots. To test Descent's multiplayer features, I enlisted volunteers to play a network game on four Power Macs connected over Ethernet. The test players included expert gamers as well as novices who had never touched a joystick.

Each player remarked on how unaware they were of their physical surroundings while playing. We all agreed that Descent sets a new standard for player immersion.

If you work in a cross-platform environment, you'll be able to collaborate with up to eight of your coworkers, regardless of their platform preference; Mac and PC versions of Descent can participate in the same network game. And, unlike competing

games, Descent lets single players leave or enter at any time—if one person gets called away to a meeting, you don't all have to quit playing.

Despite its innovations, Descent has its share of minor drawbacks. Although the game installs on your hard disk for optimum play, you're required to leave the CD-ROM in the drive to hear sounds while playing. To provide the fastest action, Descent operates exclusively on Power Macs, leaving 680X0 machines behind. And although the PC version includes 120 additional customer-designed levels, the Mac version ships with just 30 predefined levels.

The Last Word Descent already offers true innovation in the crowded field of adventure games, and its graphics will impress hard-core gamers. When version 1.1 ships in a few months, its support for QuickDraw 3D will make its realistic environment even more impressive. I can hardly wait.—FRED DELISIO

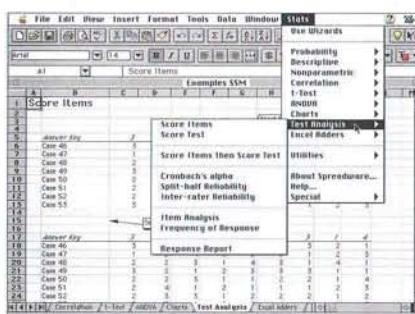
RATING: ★★★★/8.5 **PROS:** Real-time 360-degree motion; realistic graphics and audio. **CONS:** Fewer levels than PC version; CD-ROM must be in drive to launch; no support for 680X0 Macs. **COMPANY:** MacPlay (714/553-3530, macplay@interplay.com). **COMPANY'S ESTIMATED STREET PRICE:** \$49.95.

Spreadware Statistics Menu 4

REAL STATISTICS WITHOUT LEAVING EXCEL

THERE'S A BADLY KEPT SECRET IN the math community that Microsoft Excel's statistics implementation is less than ideal. Excel does provide a foundation on which to build, however, and Spreadware has done just that. The aptly named Spreadware Statistics Menu (SSM) adds a statistics menu to Excel 5. Although you can find many of its functions in Excel's scrolling lists, SSM arranges the basics plus a wide array of advanced statistical functions in a neat, hierarchical menu.

Besides the expected descriptive and probability statistics, you get relatively complete suites of correlation and ANOVA stats. SSM includes the most popular non-parametric statistics and uses X-bar and R charts to represent quality-control statistics. One suite of tests—available in no other standard stats package—evaluates tests in educational or commercial practice. A time-series suite would have been a more conventional choice, so it's gratifying to see this outburst of marketing novelty.



This Is Only a Test One of SSM's unique features is a set of tests for evaluating tests, from academic exams to questionnaires to personality profiles.

Spreadware's implementation of stats functions is very good, particularly if you have enough memory; you should have 24MB on your Power Mac and allocate at least 5MB more than the minimum for Excel. That will improve calculation performance by nearly an order of magnitude over running in memory-cramped mode and preclude an array of Excel run-time errors that seem to pop up whenever SSM doesn't have room to run properly.

Spreadware appears to have reprogrammed most of the stats functions, which now run faster than their Excel equivalents. For the adventurous, Spreadware explains how to implement new functions in Excel's

Visual Basic and includes sample code.

If you use Excel every day, adding SSM makes more sense than learning another program's data-handling conventions and charting commands. SSM's use of Excel's Range Wizards to set up analyses is especially nice, and you can use Excel's charts to produce colorful 3-D presentations.

SSM is necessarily weaker at exploratory statistical graphics than Data Description's Data Desk (see *Reviews*, March 1996) because SSM depends primarily on Excel for charts; nor would it be a good choice for the census-bureau-size data sets that SPSS (see *Reviews*, February 1996) specializes in, since SSM is limited by Excel's maximum worksheet size. Also, SSM's manual contains inconsistencies, but if you have some Excel experience you can work around them.

The Last Word This Excel add-in bears comparison with leading stand-alone statistics packages like Statistica and SYSTAT. It's cost-effective, and Excel users can put it to work in minutes.—CHARLES SEITER

RATING: ★★★★/7.4 **PROS:** Fast; convenient; tests for "test analysis." **CONS:** Limits on data-file size; manual has some glitches. **COMPANY:** Spreadware (619/772-1758, spreadware@aol.com). **LIST PRICE:** \$229.

We offer unsurpassed digital image quality. (And by the looks of it, quantity too.)



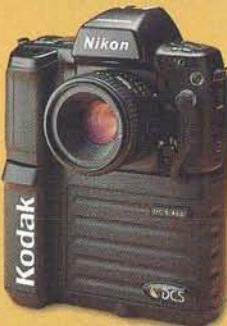
The DC50 zoom camera is our newest point-and-shoot. It comes with three levels of image resolution, and a 3x zoom lens. PCMCIA-ATA compatible card optional.



The DCS 460 digital camera offers 6 million pixel resolution, and a high sensitivity for shadow and detail. Our premier digital camera.



The EOS-DCS 5 digital camera works seamlessly with CANON auto focus lenses, offers 1.5 million pixel resolution, and a continuous burst rate of 10 images in just over 4 seconds.



The DCS 465 digital camera back is compatible with medium format cameras (HASSELBLAD, MAMIYA) and 4x5 view cameras. It offers 6 million pixel resolution, and works with professional flash systems.



The DC20 digital camera offers 1.5 million pixel resolution, and an initial continuous burst rate of 5 images in 2.25 seconds. The perfect NIKON camera partner.

Kodak didn't start out with this many digital cameras. We started out with one. The first megapixel digital camera ever built, in 1986.

Since then, we've

made cameras for NASA, for professional photographers, for medical professionals, desktop publishers, and business people.

And as we've created cameras to meet different needs, our digital camera family has grown.

While *Kodak Digital Science™* cameras vary from high-end to point-and-shoot, what they share are the very things that make them *Kodak* cameras. A commitment to preserve image quality through every stage of the digital process. And the technology to make it so.

Technology including a sensor designed for computer

images, not video output, that captures fine detail. A color filter array pattern that holds images true to form while minimizing pixellation.

A patent-pending compression algorithm, that prevents data loss during storage. And of course, Kodak's color expertise, responsible for our rich, true, saturated palette.

Together, this technology captures and protects images like no other single-shot digital camera, resulting in unsurpassed picture quality that you can only get from Kodak.

To find out more about our full line of *Kodak Digital Science* cameras, call 1-800-322-2177 ext. 603 in the U.S., 1-800-465-6325 ext. 36100 in Canada. Or visit us on the World Wide Web at <http://www.kodak.com/>

Kodak *ds*
digital science™

It's how you put pictures to work.™

Lotus.

The power of people
working together.



Introducing cc:Mail for Macintosh Release 3.0.

Lotus cc:Mail™ for Macintosh® Release 3.0 lets you send and receive virtually anything you can create to virtually anyone, on any mail system, anywhere in the world. It doesn't matter whether other users you talk to work on Macintosh or computers running DOS®, Windows®, or OS/2®. cc:Mail's 100+ file viewers let you read and print file attachments, developed on other operating systems and platforms. Call 1-800-872-3387, ext. 8515* or explore Lotus on the World Wide Web at www.lotus.com for more information.

cc:Mail for Macintosh

cc:Mail is the most comprehensive e-mail system for the Macintosh. The new Release 3 features include: built-in AppleScript support which lets you drag-and-drop commonly used addresses, folders, and other objects to the desktop for easy accessibility; cc:Mail Rules which makes managing your e-mail easy by automating everyday tasks; and cc:Mail Viewers which let you view and print attachments even if you don't have the application with which they were created. When it comes to e-mail for the Macintosh, nothing is more complete or easier to use than cc:Mail.

*In Canada, call 1-800-GO-LOTUS. ©1996 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. Lotus is a registered trademark and cc:Mail is a trademark of Lotus Development Corporation. All company names are registered trademarks of their respective companies.

Mac IRISPen

PORTRABLE, ACCURATE PEN OCR SCANNER

THE MAC IRISPEN IS A RESEARCHER'S dream come true, particularly for PowerBook users who want to extract a few paragraphs from a report or when using a full-size flatbed scanner would be impractical or overkill. This small, handheld scanner grabs text at 100 characters per second, converts it using OCR software, and inserts it directly into your application. The pen recognizes most printed material with a high degree of accuracy, and you can improve its precision by creating custom dictionaries of the fonts you encounter most often and training it to read oddball characters and fonts.

The miniscanner consists of the data pen itself, roughly the size of a VCR remote control, linked to an interface device that doubles as a cradle. A cable from the interface, which is powered by batteries or an AC adapter, plugs into your serial modem or printer port (use the modem port if your desktop machine is on a network, since you must disable AppleTalk when using the pen with the printer port). Both the modem or printer and the IRISPen can be plugged in simultaneously using a pass-through con-



SUZANNE ROADY

nector on the interface. A parallel-port version of the IRISPen that uses a proprietary NuBus card is also available.

To use the IRISPen, you click on the IRIS application icon, lift the pen from its cradle, and pass the pen over a line of text as if you were using a highlighter. You can view the line you're scanning through a window in the pen; guidelines help you pinpoint the line you wish to capture. A roller at the tip of the pen acts as a start/stop switch, and a sliding control on the pen adjusts brightness. You can even insert a carriage return, space, tab, or other user-defined character by clicking a button on the side of the pen. Text of varying size, style, and quality presents no problem. (Because the scanning path is less than a half-inch high, though, text must be 22-point or smaller to be recognized.)

The IRISPen is remarkably forgiving of errant pen strokes; it accurately translated text even when my hand movements varied in speed or were slightly skewed. The pen also accommodates both left- and right-handed users. You'll need at least a 68020 with a Paged Memory Management Unit, 8MB of RAM (16MB for a Power Mac), and 32-bit addressing turned on.

The Last Word The IRISPen isn't designed for high-volume OCR applications and can't capture images, but it shines at specialized data input, such as grabbing customer numbers from invoices or transferring figures from spreadsheets. It's small enough to be easily portable, and its OCR accuracy is sufficient for most applications (although you'll want to double-check figures scanned in from spreadsheets). This is definitely a niche product, but one that meets an important need.—DAVID D. BUSCH

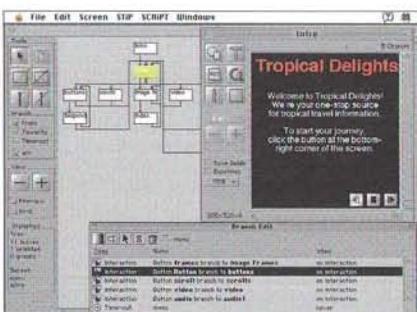
RATING: ★★★/6.9 **PROS:** Portable; accurate; lets you scan just what you need; accommodates uneven scanning strokes and variable text. **CONS:** Tedious for capturing large quantities of text; networked users must turn off AppleTalk to free up printer port. **COMPANY:** Image Recognition Integrated Systems (407/395-7831, iris@hooked.net). **LIST PRICE:** \$299.

STiP Professional 2.1

PROMISING, BUT FLAWED, MULTIMEDIA AUTHORING PROGRAM

ONCE YOU GET PAST ITS AWKWARD name, you'll find STiP Professional is a powerful, if quirky, multimedia authoring tool that lets you create interactive titles for the Macintosh and Windows, save finished projects in a protected form, and distribute them royalty-free. STiP stands for Screens, Trees, and scriPtable Player, the program's defining characteristics. Rather than arranging media elements along a timeline, as in Macromedia Director, you draw lines that interconnect screens, creating a flowchart called a *tree* (see "STiPulations").

Developed by Grant Software Solutions and distributed by MacVonk, STiP has a graphical development environment similar to that of Apple's Apple Media Tool and Macromedia's Authorware Professional. Unlike Apple Media Tool, however, STiP has a robust programming language for reading and writing files, controlling a production's elements, displaying movies and playing sounds, and interacting with external devices. And unlike Authorware, STiP provides rudimentary support for text and



STiPulations You define the relationship between screens and their elements using STiP's Tree Edit and Branch Edit windows. It's a fairly simple process, although you'll scratch your head a bit at first.

is saddled with a vague manual and simplistic sample projects.

STiP's built-in screen editor lets you import graphics in several formats, QuickTime movies, and text. Its tools let you draw simple shapes; type text; and create interactive buttons, frames, and scroll bars. You can also create master pages to hold elements that are used on several screens; only Authorware Professional 3.0 has a similar feature.

Although the screen editor is powerful, it has some surprising shortcomings. Unlike virtually every draw package, STiP doesn't let you press the shift key to constrain

movement horizontally or vertically while dragging an element, or to retain an element's proportions when resizing. Scroll bars are another problem: the bars STiP creates don't look or work like standard Mac scroll bars, and attaching one to a lengthy text field is a cumbersome process.

STiP's scripting language provides a full complement of control structures, variable types, and functions. Unfortunately, the language bears little resemblance to other scripting languages, so even experienced authors will find themselves at the bottom of the learning curve.

The Last Word STiP Professional is an odd mix of genuine power and glaring weaknesses. I wouldn't use it for text-oriented projects, but it is well suited to graphically complex ones. (You can download a demo version from <http://www.cinet.ab.ca/macvонк/>.) STiP Professional has promise, but it needs some work to, um, live up to its name.—JIM HEID

RATING: ★★/4.9 **PROS:** Good (if erratic) performance; royalty-free distribution of final projects; robust scripting language. **CONS:** Awkward omissions; nonstandard scroll bars; poor documentation. **COMPANY:** MacVonk (403/232-6545, mvc@eword.com). **LIST PRICE:** \$1295.

FUNNY, YOUR
GUARDIAN ANGEL WAS
BEHIND YOU
A MINUTE AGO.

THE SICKEST, MOST ENGRASSING PC GAMES EVER CREATED HAVE COME TO THE MAC.
THEY'RE ULTIMATE DOOM, DOOM II AND HEXEN IN THEIR ENTIRETY.
THEY HAVE FOUR TIMES THE GRAPHIC RESOLUTION OF THE PC VERSIONS. THEY
HAVE MAC-TO-MAC AND MAC-TO-PC PLAY. THEY HAVE EXTERNAL WAD
FILE SUPPORT TO DOWNLOAD CUSTOM LEVELS FROM THE INTERNET. AND THEY ARE
MORE THAN YOU, OR YOUR CELESTIAL SIDEKICK, CAN HANDLE.



Distributed by GT Interactive Software. <http://www.gtinteractive.com>

Hexen™ ©1995 Raven Software, Inc. All rights reserved. Doom™ ©1994 id Software, Inc. All rights reserved. The Ultimate Doom™ ©1993, 1995 id Software, Inc. All rights reserved. Certain software code ("id Code") owned by id Software, Inc. is contained within Hexen™ and is used by Raven Software, Inc. pursuant to a license from id Software, Inc. id Code © 1993, 1995, 1996 id Software, Inc. All rights reserved. Hexen™ is a trademark of Raven Software, Inc. Doom™, The Ultimate Doom™, and id™ are trademarks of id Software, Inc. The id logo® is a registered trademark of id Software, Inc. GT™ and the GT logo™ are trademarks of GT Interactive Software Corp. Macintosh® is a trademark of Apple Computer, Inc. Macintosh® is a registered trademark of Apple Computer, Inc. All other trademarks are the property of their respective companies.

NOW AVAILABLE FOR THE MAC

THE ULTIMATE



Circle 184 on reader service card

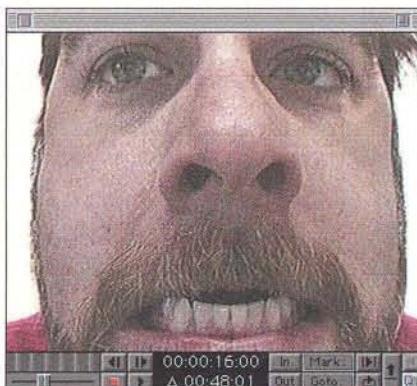
Sony PC Cam

DESKTOP CAMERA LACKS AV STRENGTH

SONY'S PC CAM DESKTOP VIDEO camera lets you record impromptu QuickTime movies, scan still video images, or project your smiling visage over a videoconferencing system using your AV-equipped Mac. Like its competitor, VideoLabs' FlexCam (see *Reviews*, December 1994), the PC Cam features a manual-focus lens with a 0.25-inch color CCD (charge-coupled device) mounted on a flexible gooseneck.

If your desk space is limited, you'll appreciate the PC Cam's small size. Its base is just 3.5 inches wide—half the width of the FlexCam—and its neck is 11 inches long, compared with the FlexCam's 18 inches. Fortunately, the PC Cam's smaller size does not inhibit its pliability.

Like the FlexCam's, the PC Cam's neck retains shapes no matter how much you twist and turn it; you can shoot objects sitting on a tabletop or frame a person's face without repositioning the camera's base. Even better, you can center the camera in front of your monitor so that you look directly into the lens while viewing on-screen images, a must for maintaining the



The Perfect Frame The PC Cam lets you frame and focus your subject with alarming accuracy. But background highlights tend to wash out and the lens produces a pronounced fish-eye effect.

appearance of eye-to-eye contact during videoconferencing. You can also rotate the camera head 90 degrees without adjusting the neck—compared with 60 degrees for the FlexCam.

Unfortunately, the PC Cam's sound and video are second-rate next to the FlexCam's. For example, the PC Cam sports a monaural microphone; the FlexCam records in stereo. And although the PC Cam offers two video jacks—composite and S-Video—Sony neglects to include an S-Video cable.

The PC Cam can focus on objects as close as 0.44 inch (the FlexCam goes as close as 0.25). As with the FlexCam, the wide-angle lens accommodates videoconferencing, but distorts close-up shots. Even though the PC Cam lets you adjust the iris to compensate for poor lighting, it requires at least 9 lux to function, compared with less than 3 for the FlexCam. As a result, you may have to turn on a few extra lights in your office, which can result in too-bright highlights and exaggerated contrast.

The Last Word The PC Cam's inconspicuous appearance is its only real advantage apart from its smaller size—the bizarre-looking FlexCam, in contrast, resembles something from a Terry Gilliam movie. Though the PC Cam performs its job reliably, it's inferior to the FlexCam in most regards. Equipped with higher-quality sound, better video, and all the necessary cables, the FlexCam is simply the better camera.—DEKE McCLELLAND

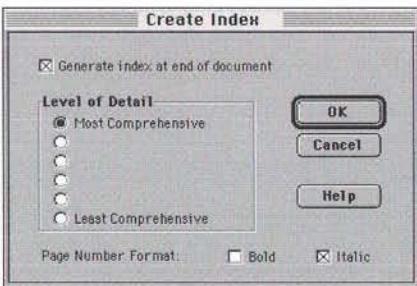
RATING: ★★★/5.9 **PROS:** Freestanding with gooseneck mount; small footprint; lens rotates 90 degrees. **CONS:** Mono sound; lacks S-Video cable; lighting response inferior to FlexCam's. **COMPANY:** Sony Electronics (941/731-4940, contact@sel.sony.com). **LIST PRICE:** \$499.

Indexicon 1.0

INDEXING PROGRAM FOR WORD 6

BEFORE I WROTE THIS REVIEW, I was skeptical of computer-based indexing programs. Having written it, I'm even more skeptical. I looked at Indexicon, a program that automatically finds indexable terms in Microsoft Word 6 documents and compiles an index.

Indexicon is easy to use: simply select it from Word's Tools menu, set the level of detail, and press a button. First I used Indexicon on a chapter from a book on Macintosh fonts. At the Most Comprehensive level, the program took about 11 minutes to create a 175-entry index for a 14-page chapter. It found key terms such as *black-letter type*, *Chancery script*, and *kerning*. It was even smart enough to list two-word font names such as *Monotype Grotesque*. But things went downhill from there. While it indexed many relevant terms, it also missed numerous terms, including *em dash*, *leading*, and *pica*. It was flummoxed by proper names, listing Nicolas Jenson as *Nicolas Jenson* rather than *Jenson, Nicolas*; it had a tendency to start entries with adjectives (*Slushy winter roads*); it treated plurals as separate entries, listing *Descender* on one page and



Indexing Options Indexicon lets you create an index that ranges from minimal to comprehensive.

Descenders on another; and it didn't recognize apostrophes, resulting in entries such as *Computer's instructions*.

Finally, Indexicon's index contained a lot of inappropriate entries, including *Musical compositions*, *Newspaper*, and *Wine*. The latter entry illustrates Indexicon's fatal flaw; unlike a human indexer, it doesn't understand what it's reading (the chapter noted that early printing presses were based on wine presses). You can eliminate such spurious terms by viewing flagged entries in a document and editing them before compiling your final index, but that's time-consuming. When Indexicon indexed a chapter of a book about the Internet, it listed many relevant terms—*Internet Relay Chat*, *Modem speeds*, *NSFNET backbone*—and a

good deal of nonsense, including, *Santa Cruz Banana Slugs*, *Walnut-sized sub-brain*, and *Uncle Steve Yahoo*. Granted, the author writes in a colorful style, but no sane indexer (and indexers are an extraordinarily sane lot) is going to enter *Uncle Steve Yahoo*. Indexicon did better with a dry-as-a-bone article on programming, finding programming commands and other special terms. Still, the usable-entries-to-chaff ratio was too high. Decreasing the level of detail didn't help. A midrange setting didn't find enough relevant entries, and the Least Comprehensive setting generated a one-entry "index" for the font-book chapter.

The Last Word A computer-based indexer is a laudable idea, but one that needs work. Perhaps a bank of supercomputers running a neural net could equal the brain-power of a human indexer. This personal-computer-based program can't. Instead of buying Indexicon, I'd recommend spending \$40 on *The Chicago Manual of Style* and reading the section on indexing.—ERFERT FENTON

RATING: ★★/3.0 **PROS:** Automates finding indexable terms. **CONS:** Has trouble identifying indexable terms; works only with Microsoft Word 6. **COMPANY:** Iconovex (612/896-5100). **LIST PRICE:** \$129.

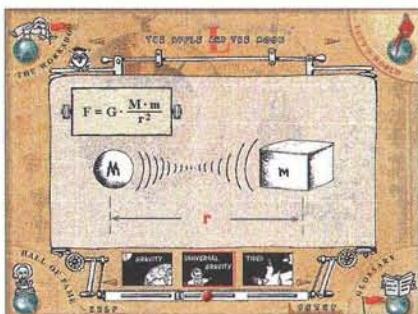
The Cartoon Guide to Physics

ENTERTAINING INTRO TO KINEMATICS

LARRY GONICK'S *CARTOON GUIDES* are a smashing success in traditional publishing—the physics and the statistics guides are perennial best-sellers in their subject areas. HarperCollins Interactive has performed the admirable feat of making a CD-ROM that's as good as Gonick's books.

The Cartoon Guide to Physics (CGP) covers the first semester's worth of material in a high-school or introductory college physics course: velocity, acceleration, gravity, and angular momentum. It doesn't include electricity and magnetism, or thermal physics. The program is designed to accompany regular coursework; however, someone with intellectual curiosity and a minimal background in algebra could probably follow most of the material.

There are two action sections of the CGP screen (Lucy's World and The Workshop) and two reference sections (Hall of Fame and Glossary). In Lucy's World, an astronaut character lectures and acts out



Physics Pix Make Equations Click In the Cartoon Guide's Workshop, ingenious animations explain standard equations.

concepts such as constant gravitational acceleration and orbital motion. The Workshop lets you perform on-screen experiments—carefully keyed to the Lucy's World tutorial—on potential versus kinetic energy, conservation of momentum, acceleration, and gravity (see "Physics Pix Make Equations Click").

There are plenty of educational CD-ROMs on the market in which sound and animation are merely a distracting sideshow. CGP is different; its multimedia features—which are based on the art in the original book—make serious and complex points, just as Larry Gonick's cartoons perform genuine educational func-

tions in the printed *Cartoon Guide* series.

CGP has a few quirks. At several points Lucy prattles on about equations while the screen display remains static. Hall of Fame contains short descriptions of twentieth-century physicists, although the physics lessons stop with Newton's first discoveries in the seventeenth century. The Mac version has Windows-style close boxes, and sometimes it's tricky to restart an animation after you've ducked out for a peek at the Glossary section.

On a more serious note, the program requires 8MB of RAM. If ever there was a program designed to make education happen on millions of Performas, CGP is it; unfortunately, most Performa owners will have to pop for a RAM upgrade first.

The Last Word Cartoon Guide to Physics is a real value. It teaches a good introductory mechanics course, and it's interesting to users who just want to understand how the universe works.—CHARLES SEITER

RATING: ★★★★/8.6 **PROS:** Animations really teach—they aren't just window dressing.

CONS: Limited to mechanics; requires 8MB of RAM. **COMPANY:** HarperCollins Interactive (212/207-7000, interactive@harpercollins.com). **LIST PRICE:** \$49.95.

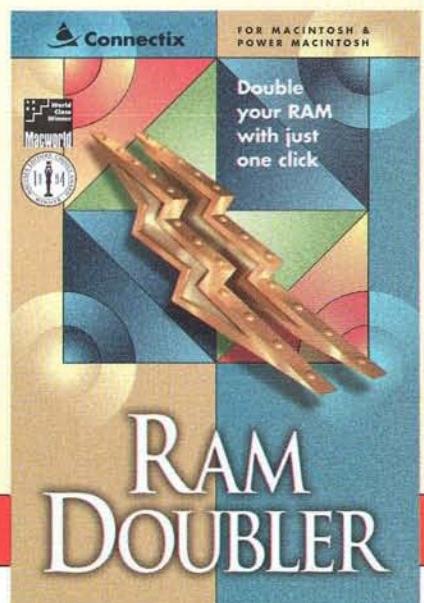
What Do You Say When You're Out Of Memory?

I need RAM Doubler.

The more memory your Mac has, the more productive you'll be. But forget about adding SIMMs. RAM Doubler™ is software that doubles your Mac's memory. RAM Doubler does what it says it will do.~Macworld. And you don't have to open your Mac. Just run RAM Doubler's 15 second installation and you can run twice as many applications – instantly. May well be the best investment you make this year.~MacUser. You'll agree. Buy RAM Doubler today and double your RAM with one click. Your satisfaction is guaranteed. RAM Doubler is available wherever great software is sold.

 **Connectix**

System Requirements: Macintosh equipped with a 68030, 68040 or PowerPC microprocessor. System 6.05 or later, including all versions of System 7 • 4 MBs required (hard disk required for machines with 4 to 6 MBs) • Not compatible with Mac SE, original Mac Classic, original Mac LC or PowerBook 100 or Mac II without a 68851 PMMU or any accelerator that does not work with virtual memory.



© 1995 Connectix Corporation, 2655 Campus Drive, San Mateo, CA 94403 USA. 800-839-3629 • 415-571-5100 • FAX: 415-571-5195
EMAIL: info@connectix.com • RAM Doubler is a trademark of Connectix Corporation. All other trademarks are the property of their respective holders.



Accelerate your PCI Bus with SCSI.

The Apple® Power Macintosh™ is fast. And, the new PCI bus makes it even faster. But without Adaptec® PCI-to-SCSI acceleration, it may never reach full throttle.

Introducing the new Adaptec PowerDomain™ 2940W SCSI accelerator. It'll make you feel like you turned a crop duster into a supersonic jet. It's the fastest PCI-to-SCSI card available. Watch your Adobe®

HOW TO MAKE POWER MACINTOSH FILES FLY.

PhotoShop™ files fly at top speed — up to 40 MB per second. Plus, it's also designed for Ultra peripherals today.

But, that's the performance people expect from Adaptec. For over a decade, we've made SCSI the performance I/O of choice. In fact, after helping to develop the PCI standard, we've shipped over 1.2 million PCI-to-SCSI boards — more than all of our competitors combined.

So the next time you're finger tapping while you wait to capture a digital file, call 1-800-804-8886 ext. 7736.* We'll tell you how your Power Macintosh can really take off.

*For more information by fax, dial 1-408-945-2570 ext. 7736, request document no. 24605 or visit our World Wide Web home page at <http://www.adaptec.com>. ©1995 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo, PowerDomain, and AHA are trademarks of Adaptec, Inc. which may be registered in some jurisdictions. All other trademarks used belong to their respective owners.

adaptec®

I/O. NOW MORE IMPORTANT THAN EVER.

In the 1st Degree

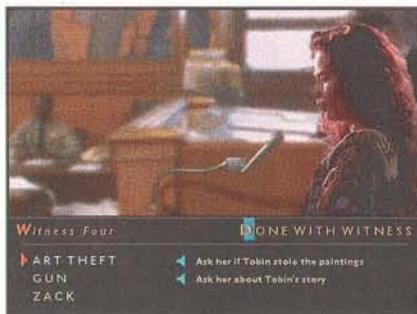
REALISTIC, INTERACTIVE LEGAL THRILLER

EVEN IF YOU DIDN'T GET HOOKED on the O. J. Simpson trial, there's a good chance you'll get sucked into Bröderbund's high-tech courtroom drama, *In the 1st Degree*. This interactive adventure mixes intrigue, suspense, psychology, and a dash of cynical humor in a slick package that's nearly irresistible.

When you play *In the 1st Degree*, you see the world through the eyes of an attorney working a complex, high-profile murder case. Your job isn't to determine who-dunit—art-gallery owner James Tobin freely admits he shot his partner. As prosecutor, you need to systematically disprove Tobin's claim of self-defense so you can win a first-degree murder conviction.

More than any game we've played, *In the 1st Degree* has the look, feel, cinematography, and pacing of a high-quality television drama. Emmy-award-winning producers, working with professional actors, state-of-the-art digital-video techniques, and a first-rate script, bring new realism to the genre of interactive fiction.

There are no cardboard computer-game characters here; the players in this



On the Stand It's obvious that Ruby's holding something back. She'll talk, but only if you ask the right questions.

drama have emotional depth and humanity. Witnesses react realistically to your questions, and their responses vary depending on your style of questioning. Only by successfully playing on the psychological quirks of each witness can you uncover the full story (see "On the Stand").

A television news team shows up between scenes to provide one-dimensional "expert analysis" and commentary. Their superficial pontification provides wry humor to balance the dark drama as it unfolds.

Our first game started as a solo effort, but by the time we reached the courtroom, six of us were crowded around the Mac, loudly arguing over legal strategy.

Even with our family's best legal minds on the case, we were barely able to score a second-degree conviction, and post-trial TV commentators wasted no time roasting our performance. Undaunted, we tried again and watched how the trial unfolded differently with each new strategy. Finally we returned, armed with the official \$19.95 strategy book, and landed a solid first-degree conviction and a dramatic ending that exceeded our expectations.

We only encountered one minor conflict: we had to unplug the QuickTime Power Plug extension before we could play. But a helpful dialog box pointed out the conflict in advance.

The Last Word *In the 1st Degree* is a technological tour de force. If interactive TV is the future of home entertainment, *In the 1st Degree* takes a big step toward that future.—GEORGE AND BEN BEEKMAN

RATING: ★★★★/8.8 **PROS:** Seamlessly integrated digital video; excellent acting and cinematography; multiple plot threads and endings. **CONS:** Less interesting after a few playings; incompatible with QuickTime Power Plug extension. **COMPANY:** Bröderbund Software (415/382-4700, webmaster@broder.com). **COMPANY'S ESTIMATED STREET PRICE:** \$49.95.

Break the speed limit.

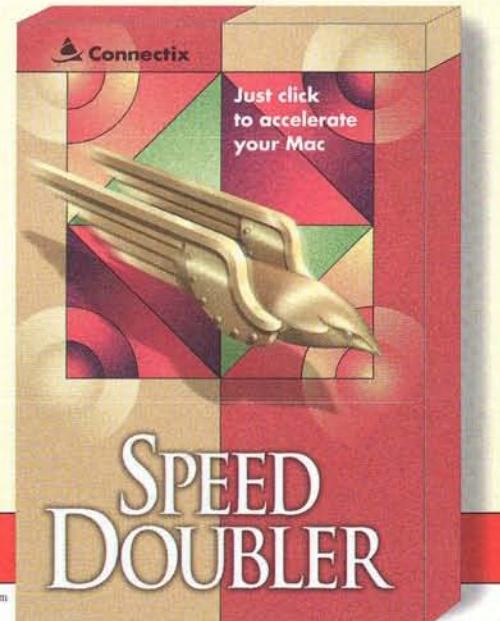
Break the speed limit on your Mac with Speed Doubler™. It's software that installs in seconds, requires no hardware upgrades and takes your Mac to the next level of performance. You get faster access to the data you use most. Faster disk access. Faster Finder performance. And check this: Speed Doubler automatically doubles the emulation speed on Power Macs.

With Speed Doubler, Power Macs instantly run non-native applications twice as fast! For instance, recalculate a 5000 cell Excel 4.0

spreadsheet with Speed Doubler in 6 seconds, without it...13 seconds. Run a summary calculation of 1500 FileMaker Pro records in 90 seconds instead of 3 minutes. It's not magic. It's Connectix Speed Doubler. And if you own a Power Mac, you gotta have it. Get Speed Doubler today wherever fine computer products are sold. Your satisfaction is guaranteed.

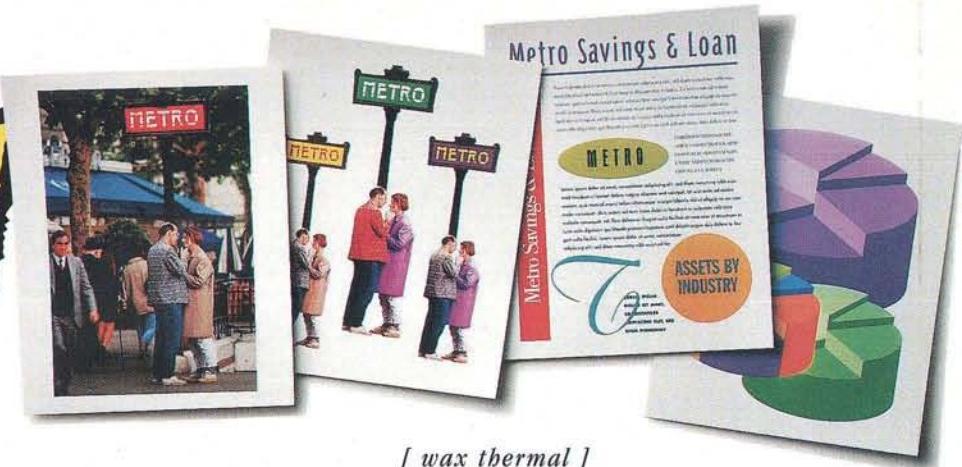
 **Connectix**

Requirements: Macintosh equipped with a PowerPC, 68040, or 68030 microprocessor • System 7.0 or greater • 8 MB physical RAM or greater • Compatible with Connectix RAM Doubler • Not compatible with Mac Plus, Mac SE, original Mac Classic, original Mac LC or PowerBook 100



© 1995 Connectix Corporation, 2655 Campus Drive, San Mateo, CA 94403 USA • 800-839-3629 • 415-571-5100 • FAX: 415-571-5195 • EMAIL: info@connectix.com
Speed Doubler and RAM Doubler are trademarks of Connectix Corporation. All other trademarks are the property of their respective holders.

IT MAKES ROUGHS



[wax thermal]



IT MAKES PROOFS

[dye sublimation]



IT MAKES MONEY

Do the numbers.

Call us and we'll send you a Seiko Instruments *Profit Disk* that lets you calculate for yourself how quickly a ColorPoint dual technology printer pays for itself.* You'll be amazed at how much sense (*and dollars*) buying a dual technology printer from Seiko Instruments can make.



Just think of it, two printers in one. The economical **thermal wax** mode for roughs and drafts, and the **dye sublimation** mode for crisp, photorealistic final proofs that come incredibly close to your Matchprints. With Adobe PostScript Level 2, a high capacity internal hard disk, full-bleed output in both letter and tabloid, you get the best of all worlds. Without having to pay for all of them. In fact, if you want to lease a ColorPoint printer, we can help you there too.

Get your *free* Seiko Instruments *Profit Disk* today and start getting serious about the quality of your work. It makes perfect sense. Call **1-800-888-0817**. Get serious. Get Seiko.

SII
Seiko Instruments

*Calculations show that a ColorPoint dual technology printer can pay for itself in as little as 6-months under average use. ©1996 Seiko Instruments USA Inc. ColorPoint is a trademark of Seiko Instruments USA Inc. Matchprint is a trademark of 3M Corporation. Postscript is a trademark of Adobe Systems Inc. Metro photography by Chris Hardy.

Circle 93 on reader service card

MapLinx 3.0

A ZIP-CODE-LEVEL MAPPING PROGRAM

DATA-MAPPING SOFTWARE RANGES from utterly basic programs that place a dot in the center of each zip-code area where you have a customer to the breathtakingly sophisticated programs used to reapportion legislative and congressional districts. MapLinx 3.0 falls into the zip-code-dot category.

Your data must be in a tab-delimited text file, and every record needs a zip code. You can also set up a publish-and-subscribe link with an application (MapLinx reads files from ACT, 4th Dimension, DataDesk, and Control Classic). MapLinx can display data as zip-code centroids, or it can shade counties or states based on a designated field. The program quickly and accurately read the 5- and 9-digit zip codes in my 2600-record data file.

MapLinx provides almost no data-manipulation capabilities: it can count the number of records for each zip code, county, or state; and it can total or average the values in a field for all the records in each zip code, county, or state. Unfortunately, it provides few other useful capabilities. For example, MapLinx can't automatically dis-



Northeast Sales Sales ranges were set manually. The progression from light yellow to dark red matches sales figures.

play points of different sizes or colors based on a value (you can modify points and colors manually). It can't calculate across fields in the data file—for example, to compare 1995 sales against 1994 sales. Nor does MapLinx provide statistical or analytical tools—you can't identify outliers, cross-regional trends, and so on. It can automatically define breakpoints—that is, it can break the values into ranges such as \$0 to \$5000, \$5001 to \$10,000, and the like.

MapLinx lets you label points or regions on the map, add and format text and point symbols, and hide or display a few geographical references such as major roads and major cities. Unfortunately, you can't modify the text or layout of a map's legend.

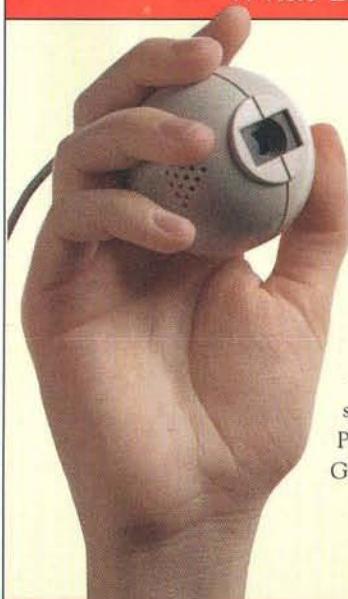
A serious drawback is MapLinx's closed architecture. You cannot create custom

regions, such as sales territories, or add map geometry, such as municipal boundaries. In fact, you can't even add Hawaii and Alaska. MapLinx also has a few interface quirks. For example, to hide or display map features, labels, or data on the map, you must press A (to *always* show), R (for a *range* of zoom levels you can't set), or N (to *never* show), and double-click on cells in the Data Layers or Map Layers palette. This isn't merely weird—it's hard to remember. And tugging on a corner to make the map bigger or smaller changes its scale, while tugging on its top, bottom, and sides changes the area displayed.

The Last Word MapLinx is a useful tool if you only need to see where your customers are located. It can produce basic reports, such as a list of records, or a quick summary of records by data type. But if you need to analyze your company's market opportunities or sales, simple lists and quick summaries won't be enough.—DAN LITTMAN

RATING: ★★/4.4 **PROS:** Easy to use; snappy screen refresh. **CONS:** No data-manipulation capabilities; few visual-enhancement tools; can't create custom regions; interface quirks; no map for Alaska or Hawaii. **COMPANY:** MapLinx (214/231-1400). **LIST PRICE:** \$149.95.

What Do You Do With A \$100 Digital Video Camera?



Have A Ball.

QuickCam™ includes everything you need to make movies and take pictures with your Mac. Plug in one cable, install the software and you're ready to roll. Add still photos to documents, newsletters, databases. Record QuickTime® training movies, video conference, create animated cartoons—all for around \$100. Works with all QuickTime compatible software and on all QuickTime compatible Macs, including PowerBooks®. It's easy, fun, and your satisfaction is guaranteed. Get your QuickCam today where fine computer products are sold.

 **Connectix**



MAKE MOVIES



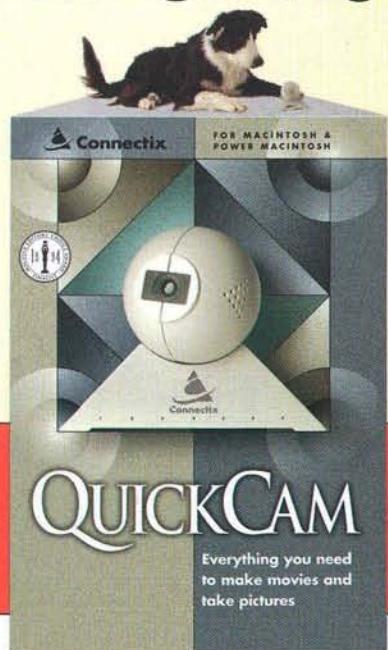
VIDEO CONFERENCE



TAKE PICTURES



BE CREATIVE



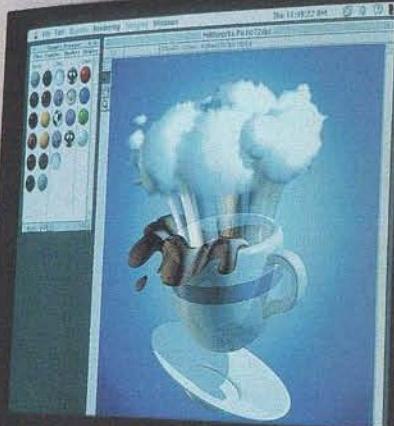
© 1995 Connectix Corporation. 2655 Campus Drive, San Mateo, CA 94403 USA. 800-839-3629 • 415-571-5100 • FAX: 415-571-5195 • EMAIL: info@connectix.com. QuickCam is a trademark of Connectix Corporation. QuickTime and PowerBook are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective holders.

Created on a Macintosh with
64MB of Kingston memory.

◀ Created on a Macintosh
with 8MB of Kingston
memory.



Created on a Macintosh with
128MB of Kingston memory.

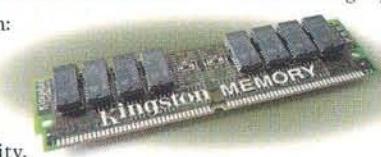


THESE DAYS, IT TAKES A LOT MORE MEMORY TO BE YOUR BEST.



Many of the masterpieces created on a Macintosh have one very powerful ingredient in common:

Kingston memory. As software becomes more and more complex, memory demands go up. Of course, it's not only the amount of memory that matters, it's the quality. Nobody understands that better than Kingston. We test 100% of our modules. In fact, we test every cell on every chip on every module.



On a 16 megabyte module, that's 128 million cells. Only the modules that survive get the Kingston name. That's why we're an Authorized Apple RAM Developer and committed to selling the highest quality Macintosh memory. After all, your best work is a showcase for our best work. To find Kingston memory that was made specifically for your Macintosh, just call (800) 435-0677.

Kingston
TECHNOLOGY CORPORATION

For more information call us at (800) 435-0677



or look for us on the Net: <http://www.kingston.com>

Kingston Technology Corporation, 17600 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2667, Fax (714) 435-2618. © 1995 Kingston Technology Corporation. Kingston Technology is a registered trademark of Kingston Technology Corporation. All rights reserved.

Circle 201 on reader service card

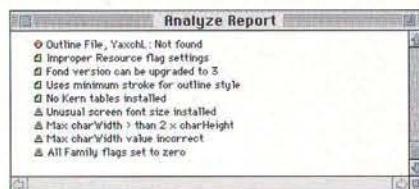
theFONDler 4.0.1

FONT UTILITY DIAGNOSES PROBLEMS

DO YOUR FONTS EVER BEHAVE strangely? Perhaps a font you installed doesn't show up in a Font menu. Or it shows up in the menu but prints as another font. Maybe a font seems to print just fine—until you notice it has no kerning pairs. If you use a lot of fonts, sooner or later you'll encounter behavioral mysteries. In many cases, theFONDler can solve them.

This diagnostic utility can spot—and often fix—a variety of font problems. (Its name derives from the FOND—font family descriptor—resource.) Font troubles stem from a number of sources, including font-ID-number or -name conflicts, missing fonts, damaged files, or files that weren't created according to specs. theFONDler spots these anomalies, and others.

The Analyze function checks your font library for possible problems and generates a list of any glitches it finds. Icons indicate the severity of each problem, from items of interest (for example, the font requires the Symbol font to print certain characters) to highly suspicious findings (a corrupt PostScript printer file). These findings don't



Inner Workings of Fonts theFONDler's Analyze function checks fonts and lists potential problems.

always tell you why a font is misbehaving, but in some cases they point you to a solution; if a file is damaged, for example, you can try reinstalling the font from its original disk. I used Analyze to check fonts on a bargain-priced CD-ROM; when the report indicated that the fonts didn't include kerning tables, I didn't bother installing them.

theFONDler can also help you organize your fonts. The Collect function gathers all the fonts on your hard disk into a single folder; the Disburse function arranges them into family-based folders. Once theFONDler rounds up your fonts, you can have it check for duplicate font-ID numbers or names, which can cause frustrating display and printing problems. Another handy option automatically deletes unwanted screen-font sizes, which many ATM users like to do.

You have to know a thing or two about the internal workings of fonts to understand

many of theFONDler's messages. Even though the manual explains diagnostic messages, a casual user probably won't know what to do when informed that "Family ID differs from Resource ID." Unfortunately, the manual, although detailed, does little to enlighten you as to what some of the problems might mean, or what you can do to fix them. The user interface can be intimidating as well; I found navigating from menu item to dialog box to subdialog box to be confusing in some cases.

The Last Word theFONDler is a versatile and valuable diagnostic tool, but it's not for everyone. If you understand the basics of how fonts work, but are still bedeviled by puzzling font problems, theFONDler may be just what you need. It can also come in handy for owners of huge font collections, font designers, people who want to check the quality of bargain fonts, or those who send files to imaging service bureaus.—ERFERT FENTON

RATING: ★★★/6.5 **PROS:** Extensive tests for font problems; aids for organizing fonts. **CONS:** Problem explanations and solutions not always clear; user interface needs work. **COMPANY:** Rascal Software (805/255-6823, rascal@rascalsoft.com). **COMPANY'S ESTIMATED PRICE:** \$69.95.



NoteBook Enhancements





Docking Stations
PB 100, 500,
5300 Series



Monitor Stands



Auto Power
Adapters



Mice &
Keyboards



Battery Chargers
& Conditioners



Foreign
Phone Adapters

Call For Free Catalog!

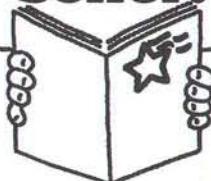
800-897-8993

Lind & PilotTech
(612) 927-6303
Fax: (612) 927-7740

Fax-On-Demand: (612) 927-4671
lrlind@aol.com—pilottech@aol.com
<http://www.lindelectronics.com>
AOL Forum - Keyword: LIND

Circle 10 on reader service card

This could be a best seller.



But it's free.

You can't buy the Consumer Information Catalog anywhere. But you can send for it, free! It's your guide to more than 200 free or low-cost government publications about getting federal benefits, finding jobs, staying healthy, and lots more. Send today for your latest free Consumer Information Catalog. The Catalog is free. The information is priceless. Send your name and address to:

**Consumer
Information Center
Department BEST
Pueblo, CO 81009**

It's Here!!!

THE \$99 RELATIONAL UPGRADE FOR FILEMAKER PRO.



JUST SOME OF THE NEW FEATURES

- RELATIONAL POWER
- ENHANCED SCRIPTMAKER®
- AUTO PHONE DIAL
- INTEGRATED MAIL MERGE
- LARGER FILE SIZE
- OPEN MORE FILES
- NEW TEMPLATE SOLUTIONS
- NATIVE POWER MAC™
- PARAGRAPH FORMATTING

is the ultimate in relational databases and it makes great improvements over its worthy predecessors," says Mac Home

Great news in the battle to be more productive: the revolutionary upgrade for the leading Macintosh database is now shipping, complete with an arsenal of innovative features. "FileMaker® Pro 3.0

Journal (1/96). It "...puts all other Mac databases to shame," raves Small Business Computing Magazine (1/96). FileMaker Pro 3.0 only costs \$99 to upgrade or \$199 for the full product. So march on over to your nearest dealer, or just call

1-800-293-0617 ext. 995
to order direct.

CLARIS®

Simply Powerful Software™

*In Canada, please call 1-800-361-6075, ext. 141.

© 1996 Claris Corporation. All rights reserved. Claris, FileMaker and ScriptMaker are registered trademarks and Simply Powerful Software is a trademark of Claris Corporation in the U.S. and other countries. Macintosh is a registered trademark and Power Mac is a trademark of Apple Computer, Inc. in the U.S. and other countries. All other trademarks are property of their respective owners. Pricing reflects Claris' estimated retail price and actual price may vary.

GET ON THE WEB

**F O R G E T U N I X —
B U I L D Y O U R S I T E
O N T H E M A C**



You say you're feeling queasy because your boss just stopped by your office and asked, "Where's our Web server?" You feel oppressed because you're supposed to get online order processing, technical support, and periodic video updates of the office aquarium up and running by Friday? You think that your life is over because this means you finally have to learn Unix? Well, cheer up, Bucko. You are about to read everything you need to know to get a Web server set up by Friday—perhaps not this Friday, but one in the near future. All you need is your Macintosh wiles, and a friend in the accounting department to funnel a little extra money your way.

Conventional wisdom holds that you get your company online by renting space on a Unix Web server from your friendly neighborhood Internet service provider. Such providers have a fast connection to the Internet and an experienced staff happy to charge you good money to set up and deliver your corporate home page. While this approach works, you're stuck with whatever server technology your provider supplies, which usually means maintaining (or paying a Web guru to maintain) your site using FTP and archaic Unix commands. And if you want to

do fancy things like custom orders, secure commerce, database retrieval, or real-time multimedia (for example, your boss's GuppieCam), you're likely out of luck.

But wait. Shouldn't your Mac be able to do this? A Web server is, after all, nothing more than a program running on a computer that has a full-time TCP/IP Internet connection. With TCP/IP built into System 7.5 (it was previously available as a System 7.1 extension), the Macintosh should be a natural at home-page delivery.

A Mac-based server lets you take advantage of technology you already understand, access information you already have on hand, and process it with tools you already know how to use. Some servers even take advantage of the Mac's graphical interface to make Web-server setup point-and-click simple. But can a Mac running one of the several server products now available really do the job a Unix box can?

To find out, Macworld Lab compared five Mac Web server products—Quarterdeck/StarNine's MacHTTP and WebStar,

httpd4Mac shareware, InterCon's InterServer Publisher, and Tenon's MachTen—for performance, ease of use, and features, in a range of scenarios running

on a Power Macintosh 7500/100, an excellent choice for server hardware. And we tested a Unix server, the NCSA HTTPd running on an IBM RS/6000 Model 250, to see if the Mac can compete in the real world. The Mac makes a good showing, although it doesn't do everything as well as a Unix server. It's certainly a contender worth some serious attention.

Which Mac Is Right?

Just about any Macintosh can run TCP/IP, so you might think any Mac would do as an Internet server. The processing demands placed on an Internet server, though, require at least a 68040 processor, and a Power Mac is really a better candidate for handling medium to heavy traffic.

Which OS version and TCP/IP support you use also affects performance. MacTCP has some painful limitations. First, it is not PowerPC-native, so it runs at some disadvantage on Power



Meeting the Challenge A Power Macintosh 7500/100, running WebStar server software, makes a formidable competitor as a World Wide Web server.

PLANNING FOR THE RIGHT WEB SERVER

Before you run out and assemble a server, you need to consider several important factors: the audience you intend to serve, the content you want to deliver, the Internet connection you can afford, and the minimum performance you need in order to succeed.

Who Is Your Target? As with other media, you're trying to reach a particular audience with your Web server. It could be current and prospective customers, business partners, like-minded interest groups, or even your competitors.

You should determine which of three kinds of visitors you're targeting: occasional visitors may browse your page lightly and never return; regular visitors may return to your page repeatedly to obtain some service, such as product information or technical support; frequent visitors, such as people in your own organization, may use your Web page as a regular part of their information-processing environment. If you expect only occasional visitors, you can get by with a much less capable Web server than if you offer order-entry services and real-time video. (For more on business strategies, see the feature "Stay on the Net," elsewhere in this issue.)

Sensitivity about Speed You should also consider the speed at which your audience will be connecting to you. Most home Internet users still connect via modems at the relatively slow rates of 14.4 to 28.8 Kbps. Small-business users frequently have medium-speed digital connections that range from 56 to 128 Kbps. Corporate users can often connect at speeds of 256 to 1544 Kbps or higher. Users on your local LAN will be access-

ing at 10 Mbps or even 100 Mbps.

This last group is an oft-overlooked audience. Web serving isn't just for the Internet; you can use in-house private Web serving to quickly roll out client-server applications and internal information-delivery systems. User-connection speed determines how powerful your server hardware and Internet connection must be, and how data intensive your content can be. Your Internet connection should be fast enough to accommodate two or more simultaneous users at the fastest user speed you expect. This means that two users can move data over the link simultaneously, even when several times that number of users actually are viewing the site. Most of the time those users will be reading the page, not moving traffic.

Content Matters The simplest Web page presents primarily textual information, with graphics incidental to the content. If your content falls into this category, you can expect to serve a great many users with very modest hardware and Internet speeds.

More sophisticated Web pages present integrated text and graphics, with important information contained in the graphics. You will need moderately fast hardware and Internet access, and you should expect to support fewer simultaneous users than you could with text-only content.

Some Web pages combine stock text and graphics with information retrieved from one or more databases. The Web server handles the task of querying the necessary databases and formatting the results for presentation to the end user as an HTML document. Such additional processing may not result in more information going to the user, and hence there's no need for a faster Internet connection. But it will require a beefier hardware platform to run Web-serving software and database software simultaneously.

The most sophisticated Web pages include the ability to deliver multimedia information, such as audio

and video files. Such servers may require stand-alone applications to deliver a multimedia data stream in real time. For this application, you need hefty hardware and high-bandwidth Internet pipes.

Connection Alternatives If money were no object, you'd get a 155-Mbps fiber-optic Internet connection and be done with it. But money is often a big object, and because your Internet connection fee is a recurring bill, connection speed will likely be the single largest cost factor you consider.

Today you can choose from a half-dozen Internet-connection methods, with varying trade-offs between cost and speed (see the diagram "Web-Connection Options and Costs"). The most important attribute of any Web connection is dedicated access. For your server to be continuously accessible to the outside world,

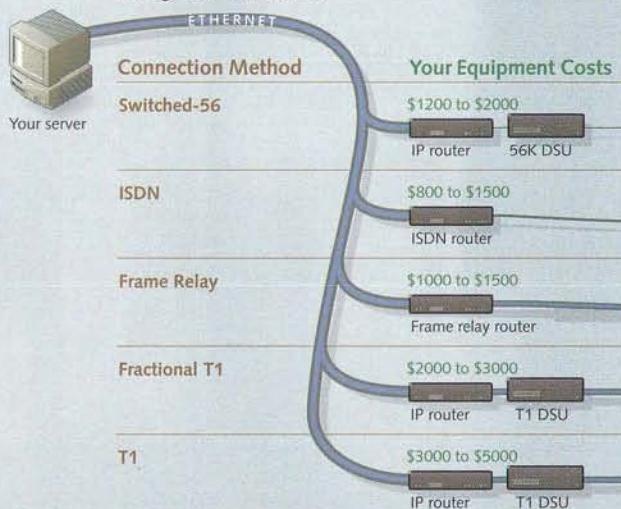
your Internet connection must be up 24 hours a day, every day. The second most important attribute is connection speed. The minimum speed to consider is 56 Kbps, which requires a digital link of some sort. This rules out analog modems as an alternative.

Some low-cost switched (dial-up) digital links, such as Switched-56 and ISDN, incur usage costs from the telephone company, ranging from a penny per minute to long-distance telephone rates. These costs may make continuous connections impractical. For example, an ISDN connection at a penny per minute would cost \$14.40 per day, or \$432 per month. You could easily buy a nonswitched digital link for one month's costs.

A workaround is the *virtual dedicated connection*: your access provider automatically dials up your server whenever someone on the Web wants to look at your site. Digital call setup takes only a second or two, and the line can stay up until several minutes of inactivity have passed. Such a connection has the appearance of a

WEB-CONNECTION OPTIONS AND COSTS

Using Your Own Server



Using the Service Provider's Server



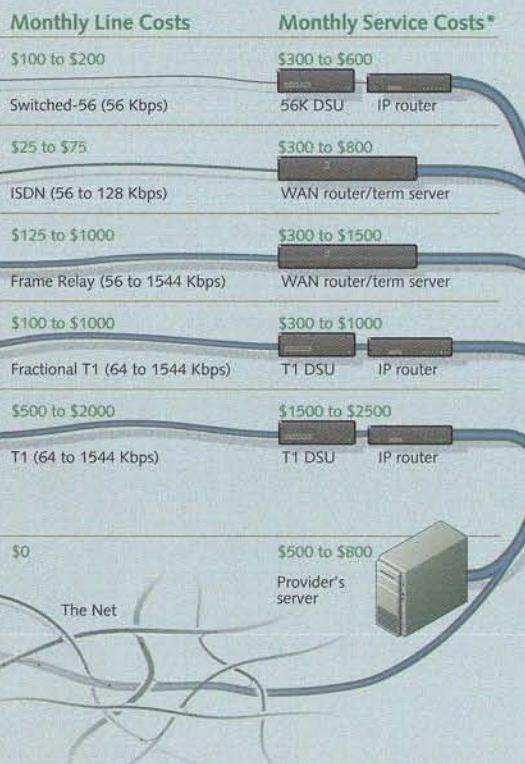
*Service provider owns hardware.

dedicated connection but incurs costs only when it's actually moving data.

Whatever connection you use, secure competent technical help for installation and configuration. Digital links can be difficult to get working, but once they're in place they're usually reliable and trouble-free. Most access providers include installation support in their start-up fees.

An alternative to buying your own digital connection is to place your server hardware on your access provider's LAN. Called *colocation*, this technique lets you share the access provider's high-bandwidth Internet connection (usually T1 or faster) while eliminating the fixed monthly cost of a digital link. The access provider still charges you for Internet access, usually by gigabyte of information your server delivers. Prices range from \$10 to \$50 per gigabyte. The disadvantage of this approach is the inconvenience of maintaining your server remotely. You have to run an FTP server application alongside your Web server for maintenance access.

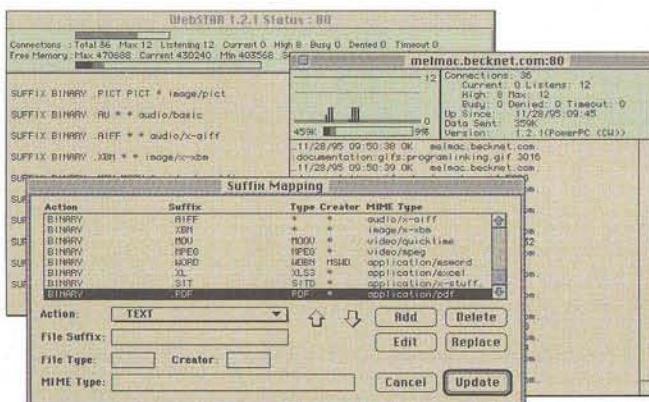
COSTS



Macs. Second, it supports only 64 simultaneous connections. Most server applications reserve some connections for other uses, reducing that number to 50 or fewer. This may sound like a lot, but modern Web browsers often open 5 or more connections to download text and graphics in parallel, so 50 connections translates to no more than 10 simultaneous users.

Open Transport Will Help Apple is replacing MacTCP with its new protocol stack, Open Transport, which runs native on Power Macs, has no connection limitations, and generally performs much better than MacTCP. However, at this writing Open Transport is having a troubled birth, with problems ranging from incompatibility with existing MacTCP-based applications to unreliable operation and system crashes. None of the currently available Mac Web-server products have been updated to work reliably with Open Transport, although all vendors say they will have Open Transport-compatible updates by the time you read this.

Apple's Integrated Solution An alternative to buying off-the-shelf software and hardware and building a server yourself is to use one of the Apple Internet Service Solution (AISS) bundles, which combine a selected Workgroup Server hardware



Server Control Center WebStar lets you remotely monitor and control one or more WebStar servers. In addition to providing real-time use statistics, including a traffic meter and traffic-history graph, WebStar lets you change any of a server's operational attributes, such as MIME types and suffix mapping.

package with a CD-ROM of Web-server software and utilities. The software includes Quarterdeck/StarNine's WebStar and a wide array of utilities. We did not test the current AISS offerings, as Apple will replace those products with new bundles in the near future.

Making the Connection The final platform issue you must settle is your physical Internet connection. For medium-speed digital connections, such as Leased-56, Switched-56, and ISDN lines, you can connect via your Mac's serial port to a data service unit (for Leased-56 and Switched-56) or to a terminal adapter (for ISDN). You must run a serial IP connection tool, such as MacPPP, to carry TCP/IP traffic to your access provider.

The serial-port approach may be inexpensive in the short term, as the hardware costs only \$300 to \$600, but can buy you problems down the road. First, unless you're running a Power Mac, your Mac's serial port likely can't sustain speeds in excess of 38.4 Kbps. Only Power Macs and some AV Macs have high-speed serial ports capable of 128 Kbps or more. You may not notice this problem until two or more users try to access your

server simultaneously. Second, even with a high-speed serial port, your Mac can get bogged down just handling the TCP/IP transport. A better approach to Internet connectivity is a stand-alone IP router connected via Ethernet. You need an Ethernet-capable Mac, but no special software. A router costs more—from \$800 to \$1500—but relieves your Mac of Internet-connection chores. A router can also provide automatic data compression, resulting in higher throughput, and can serve other machines on your LAN at the same time (see the sidebar “Planning for the Right Web Server”).

Which Software Is Right?

OK, all your hardware ducks are lined up, and you’re ready to go shopping for server software. There are choices here, too. You can go with shareware or a commercial product, a Mac-oriented product or one descended from Unix lineage. You can spend a little or a lot. It all depends on your skills and budget.

Consider Performance To see how Mac Web servers stack up against each other, as well as against the Unix competition, we tested all the servers on a Power Mac 7500/100 under MacTCP. We also set up and tested a comparable Unix system (a 66MHz PowerPC 601-based IBM RS/6000 Model 250 running NCSA HTTPd). The commercial Mac products all fared well, although not as well as the Unix product; under a load of five simultaneous users, the Mac servers slowed noticeably while the Unix box hardly took heed (see the benchmark “For Speed, Unix Is Champ”).

The freeware and shareware servers suffered serious reliability problems under a five-user load, even when configured for the maximum number of users with 16MB of application RAM (httpd4Mac also failed with two to three users on the complex HTML document). They would crash unexpectedly when too many TCP connections were attempted. Of the commercial products, MachTen was fastest, followed by InterServer. WebStar ran nearly as fast, however, with much more polish.

Ease of Use If you’re a Mac guru who loves to experiment, there are two shareware products on the market: Quarterdeck/StarNine’s MacHTTP and Bill Melotti’s httpd4Mac. Their names come from HTTPD, the HyperText Transport Protocol Daemon, which runs on Unix systems. Both products derive from the first widely available Unix Web server, the NCSA HTTPd, which we tested for comparison. True to their origins, these products get configured via Unix-style text files. There are lots of options to choose from, so the configuration files are large and confusing. If you make a typo, expect to spend a good deal of time diagnosing the problem; no friendly Mac-style error reporting here.

For Unix-at-heart Macintosh users, there are two extant versions of Macintosh Unix, Apple’s A/UX and Tenon’s MachTen. You should consider A/UX only if you’re already running it for some reason (such as on an Apple server). But keep in mind that A/UX won’t run on PowerPC hardware, so you’re limiting your future expansion options.

If you just plain like Unix, but don’t want to sell your soul



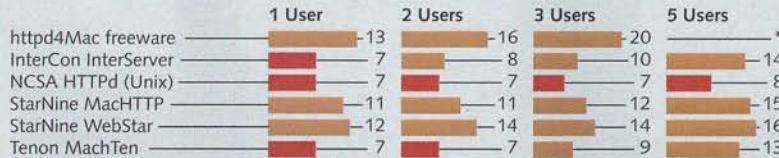
FOR SPEED, UNIX IS CHAMP

■ Best in test. Shorter bars are better. All times are in seconds. Products are listed in alphabetical order.

Mac servers tend to slow down with even a few simultaneous users, while the Unix server shows virtually no performance degradation even under the heaviest test load. This is likely due to the performance bottleneck imposed by MacTCP. Apple claims this bottleneck will disappear with Open Transport version 1.1. Our tests were not intended to stress each server to the breaking point; they looked at a moderate load (for Mac servers) of up to five simultaneous users continuously retrieving data. Two servers—MacHTTP and httpd4Mac—could not sustain even these moderate loads without crashing. Surprisingly, MacHTTP ran faster than its commercial descendant, WebStar, but speed counts for little if you don’t survive the journey. InterServer was the fastest Mac server (aside from MachTen, which runs Unix on top of the Mac OS) but still showed significant performance degradation as the load increased.

Large-Graphic HTML Document

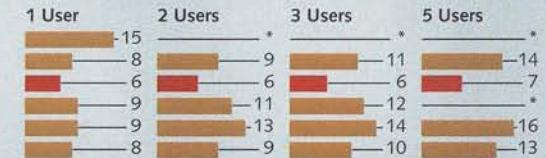
Time to download document with simultaneous, continuous traffic over one or two connections per user, including only one TCP/IP connection per user.



*Server failed.

Complex HTML Document

Time to download text-and-graphics document with simultaneous, continuous traffic over five or more connections per user, including at least five TCP/IP connections per user.



BEHIND OUR TESTS

For the Unix reference platform, we chose IBM’s PowerPC-based 66MHz RS/6000 Model 250, because this system uses the same 601 PowerPC processor found in most Power Macs. We ran NCSA’s freeware HTTPd server software because it’s a popular package in the Unix world. We tested the Mac servers on a 100MHz Power Mac 7500 with 24MB of RAM and MacTCP.

Our test documents consisted of a set of HTML files containing text, graphics, and a mixture of text and graphics. We grouped the HTML pages by total size in bytes to form small, medium, and large test sets. We ran each server with one, two, three, and five simultaneous users running the Netscape Navigator 1.12

browser; we recorded the total time each test document took to download. We ran each test suite over a 10-Mbps Ethernet LAN, a 1.544-Mbps digital T1 connection, and a 128-Kbps ISDN connection. We found that performance was proportional between test sets of different sizes and over different network connections, so we report here only figures for the largest test sets, accessed via a LAN connection. We also found that performance for large HTML text documents is limited by the browser used, so we only report times for graphics-intensive and mixed-text-and-graphics documents.—Macworld Lab testing supervised by Mel Beckman and Lauren Black

SERVING UP WEB SERVERS

	Freeware	InterCon	Quarterdeck/StarNine	Quarterdeck/StarNine	Tenon
Product	httpd4Mac	InterServer Publisher	MacHTTP	WebStar	MachTen
Star rating ^a	★/1.4	★★★/5.2	★★/4.0	★★★★/7.3	★★★★/6.3
List price	free	\$795	\$95 (shareware)	\$795	\$695
Phone	■	703/709-5500	510/649-4949	510/649-4949	805/963-6983
Common Gateway Interface	○	●	●	●	● ^c
AppleScript support	○	●	●	●	○
Apple events support	○	●	●	●	○
Open Transport capable	○	○	○	○	○ ^b
Configurable MIME types	●	○	●	●	●
URL suffix mapping	○	○	○	●	●
Access Security					
Realm control	○	●	●	●	●
Allow/deny control	○	●	●	●	●
Multiple Domains					
Multiple servers	○	○	●	●	●
Multihoming	○	○	○	○	●
Performance Controls					
Threaded execution	○	○	○	●	●
CPU usage	○	○	●	●	●
Other Protocols Served					
FTP	○	●	○	○	●
Gopher	○	●	○	○	●
Image maps	○	●	●	●	●
File aliases	○	●	●	●	●
Folder indexing	○	●	○	○	●
Access logging	●	●	●	●	●
Remote administration	○	○	○	●	●
Comments	Minimalist freeware: feature poor and unreliable.	Fast and functional, but missing key features and documentation.	Capable shareware, but unreliable under heavy load.	Polished, capable, reliable, easy to use, and reasonably fast.	Fast, but hard to use, requiring Unix administration skills.

● = yes; ○ = no. ^a Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.) ^b No phone; download from

<http://sodium.ch.man.ac.uk/pages/httpd4mac/home.html>. ^c Can execute C and PERL programs or shell scripts within its own Unix environment. ^d Includes TCP/IP support that requires MachTen to be running before any other Mac TCP/IP application. Open Transport can be run simultaneously on a separate network card.

(or your Mac hard drive) to it, consider MachTen, which runs as an application under the Mac OS. MachTen consumes prodigious amounts of disk space (plan on 100MB) but comes with a built-in Web server (NCSA HTTPd). Although you configure the Web server with text files, just like any Unix server, because you're running inside a full-fledged Unix environment you can use all the same tools and accessories enjoyed by the big Unix boys and girls.

If you're not an expert and just want to get a reliable server up and running, go straight to the commercial products. At this writing two are shipping—WebStar and InterServer Publisher—and more are on the way from other vendors. You get reliable, easy-to-use products with telephone and electronic technical support, and more features than the shareware cousins offer.

Features You Need Speaking of features, price and support shouldn't be your only selection criteria. After all, you're spending a fair sum on hardware and Internet connectivity, not to mention the investment of time to get everything set up. Consider some features that might be important in your application, and make sure your server choice supports them (see the table "Serving Up Web Servers").

The most important feature, if you're planning on doing any back-end processing, is Common Gateway Interface (CGI) support. CGI lets your HTML document invoke Macintosh programs and scripts to process user information, such as a query request, and return results, such as a database extract. To their credit, the commercial products we tested all include sample CGI scripts, and you can find a wide range of others online. WebStar's excellent CGI library puts it above the competition, however. InterServer Publisher has CGI examples, but you have to go look for them, as the documentation has not a word on the subject.

Other important features are configurable MIME (Multipurpose Internet Mail Extensions) settings and URL suffix mapping. When delivering data to a browser, your server passes along the type of data—text, GIF or JPEG graphics, sound, video—so the browser can present the data appropriately. MIME settings and URL suffix mapping let you configure your server to support new kinds of data as they become available. For example, if you want to serve PDF files, you can establish a MIME type for Macintosh PDF files, or an URL suffix map for file names ending in .pdf, so that browsers are informed when

you're delivering a PDF file. WebStar and MachTen support suffix mapping, although WebStar is the only one with a GUI configuration interface with the feature. InterServer Publisher and httpd4Mac lack the feature.

Access security is another capability you should consider carefully. Servers with access security usually support one or both of the standard Web features, realm control and allow/deny control. With realm control, you organize folders and documents into groups called realms. You can create a list of authorized users and passwords and grant them access to particular realms. When users try to access a secured realm, their browser prompts them for a user ID and password.

In contrast to realm control's active protection, allow/deny control manages access passively, based on the user's IP address or domain name. This lets you control access at the server level,

based on where the request originates. Both kinds of security controls are useful, and you'll probably want both. All the products except httpd4Mac have realm and allow/deny control, although WebStar and InterServer Publisher are the only products with a point-and-click security interface.

If you want your server to support more than one organization, two features—multiple servers and multihoming—will be important to you. Multiple-server support lets you run two or more copies of the server software on the same Mac. Users must access these servers through different TCP ports and must include the port number in their URL if it differs from the default of 80. For example, you might run a public server on TCP port 80 and a private server on port 5555. Users would use <http://www.yourcompany.com> to access the public server and <http://www.yourcompany.com:5555> to reach the private one.

WORLD WIDE WEB-SERVER SOFTWARE ACCESSORIES

Third-party vendors offer a wide range of utilities that complement Mac-based Web servers. For many specialized needs, these add-ons can be essential to the success of your Web site. Here are a few of the most notable to consider.

OpenDoor's HomeDoor (\$279 through March 1, \$399 thereafter; <http://www.opendoor.com/HomeDoor/HomeDoor.html>). OpenDoor brings HTTP multi-homing to any MacTCP-compatible Web server. This patch to MacTCP lets you assign an individual Macintosh up to 255 different IP addresses, and you can map those addresses to specific URLs in the server. This lets you support multiple, unique domain names of the form www.companyname.com, so that each name appears to have its own private Web server. HomeDoor only works with TCP port 80, the standard HTTP port, but OpenDoor says the company eventually hopes to support additional ports for servers such as FTP and Telnet.

Maxum Development's Net-Cloak and NetForms (\$195 each, <http://www.maxum.com>). This duo extends your Web server by adding new HTML commands and letting users add content to your server. Net-Cloak adds some 30 proprietary commands that execute just before the server transmits an HTML document to a requesting user.

The commands let you include dynamic real-time information in a Web page and let you perform conditional tests to generate custom Web pages. Users enter data into forms you've created, and NetForms generates HTML pages from that data and stores those pages on your server, letting you archive threaded discussions or construct other interactive services as your needs evolve.

EveryWare Development's ButlerLink/Web (free, <http://www.everyware.com>). This freeware tool lets you create forms to query, update, insert, and delete records in a Butler SQL (structured query language) database. (It requires Butler SQL, also from EveryWare.)

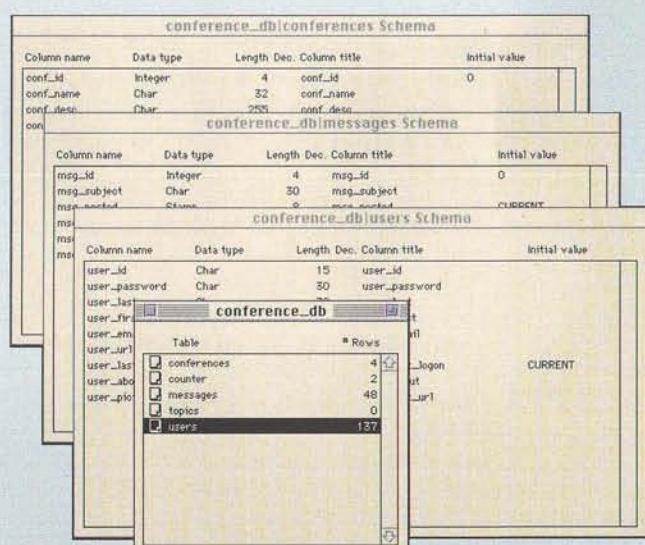
Russell Owen's FileMaker Pro CGI (free, <http://rowen.astro.washington.edu>). This freeware tool offers forms-driven access to Claris's FileMaker Pro flat-file database.

All of the database-configuration information remains stored in your HTML document; there is no need for ancillary files.

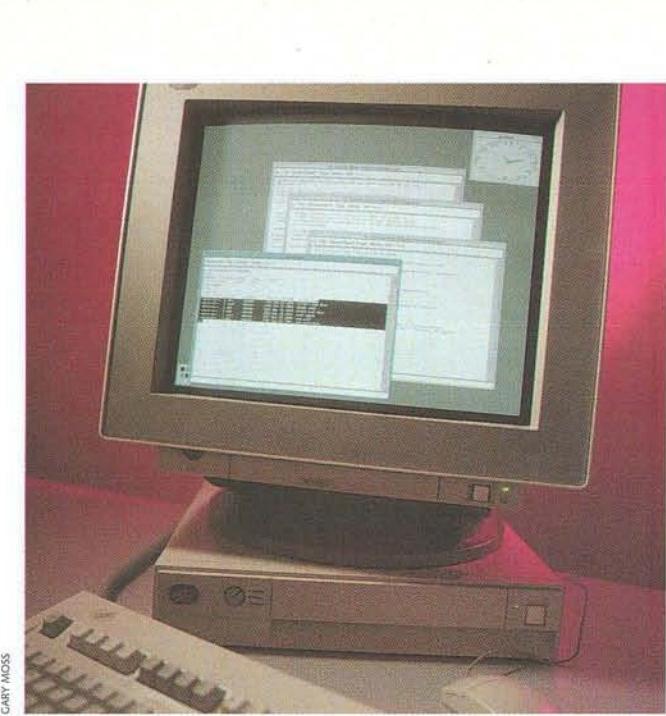
Foresight Technology's Net-Link/4D (\$189, <http://www.fsti.com/weblink.html>). This external package for 4th Dimension accesses 4D databases via CGI.

University of Minnesota's Web66 (free, <http://Web66.coled.umn.edu/>). This useful accessory is a World Wide Web cookbook full of useful techniques and downloadable utilities for Mac Web servers. You'll find step-by-step instructions for everything from soup to, um—well, you get the picture.

Jon Wiederspan's Mac WWW Development Guide (free, <http://www.comvista.com/net/www/WWWDirectory.html>). Another Web resource, this exhaustive collection of Mac Web pointers gives you one-stop shopping for everything Mac about the Web.



Full-Fledged Database Everyware Development's Butler SQL database server is a standards-compliant relational database with CGI tools for manipulating database records using structured query language from within your HTML documents.



GARY MOSS

The Unix Contender This 66MHz PowerPC 601-based IBM RS/6000 Model 250, running NCSA HTTPd, beat the Mac in speed tests—but at a high price in features and ease of use.

Multihoming lets you run servers with completely different domain names, such as www.acme.com and www.coyote.com, by giving each domain a separate, unique IP address. MacHTTP, WebStar, and MachTen all let you run multiple servers. Currently only MachTen, the Mac Unix server, supports multihoming, although you can add the capability to native Mac servers using a third-party product called HomeDoor (see the sidebar "World Wide Web-Server Software Accessories").

Performance Controls The last major feature set is performance controls. Because the Mac OS doesn't support preemptive multitasking, you may have problems running a server with many simultaneous users or with CGI programs executing in the background. Two features help here: threaded execution and CPU-usage limits. Normally, when a single HTTP request comes in for a particular HTML element (such as an icon), the Mac server must completely process that request before it can take the next one, slowing access for other users. The Mac OS now has built-in support for threaded execution, which lets a single application, such as a Web server, do more than one thing at a time. In this case, threads let the Web server accept and process HTTP requests in parallel. Only WebStar and MachTen support threads.

A related problem is balancing time between Web server and CGI program execution. It's possible for a Web server to hog the CPU so CGI programs get very little time to execute. The resulting glut of slow-running CGI programs can bog down the whole system. A server that can limit its CPU usage to a predefined value mitigates this problem, ensuring that CGI programs get enough time to execute quickly. MacHTTP, WebStar, and MachTen have this capability.

A slew of other features may or may not be important to you. Image map support lets you put clickable images in your Web pages. File aliases enable you to put Macintosh alias files into your Server folder to reference data elsewhere on that vol-

ume or on another mounted volume. Folder indexing automatically creates HTML indexes of whole folders to simplify serving many files. Access logging records every user transaction for later statistical analysis. InterServer Publisher and MachTen include add-on servers for FTP and Gopher. These are worthwhile additions if you are planning to set up a complete Internet presence.

Each product has its strengths and weaknesses. MacHTTP is feature laden and well documented, but fails under a heavy load, ruling it out as a serious commercial server. InterServer Publisher, while fast and functional, lacks important features, such as suffix mapping and configurable MIME types.

Bill Melotti's httpd4Mac is a valiant effort at minimalist shareware, but with virtually no features httpd4Mac can do little more than deliver simple Web documents. MachTen is actually an entire Unix implementation that happens to contain a Web server (NCSA HTTPd). Because it is real Unix with an embedded C compiler, it can run any Unix-originated CGI program in just about any language. Because MachTen has its own TCP/IP stack that replaces both MacTCP and Open Transport (with good results), it supports multihoming. But don't even consider MachTen unless you have some basic Unix-system-administration skills.

WebStar is a polished product with a rich feature set. It delivers on everything it promises: complete, clear documentation; point-and-click configuration; and a knowledgeable, focused telephone technical-support staff. Hence WebStar deserves our Editors' Choice designation.

The Last Word

So is the Macintosh ready for prime time in the Web-server market? Most certainly. A Macintosh-based Web server is economical, easy to set up, and relatively simple to maintain. The Mac's native AppleScript and Apple events enable you to build powerful back-end processors for delivering complex content.

Is the Mac the ultimate Web-server platform? No. The lack of preemptive task switching and limitations in TCP/IP implementation put the Mac well below the performance level of Unix-based Web servers for now (though once it fully supports Open Transport, the Mac should finally leave performance inferiority behind). But if your site doesn't need to serve dozens of users simultaneously, the Mac's attractive price and ease of use make it a great choice. ■

MEL BECKMAN (mel@becknet.com), a consulting network engineer, sets up new Internet service providers. He regularly evaluates Web servers for Mac, PC, and Unix systems. Look for his experimental Mac-based Web server at www.becknet.com.

WEB SERVER SOFTWARE



EDITORS' CHOICE

Speed is a key Web-server attribute, but it's useless without a broad range of features and ironclad reliability.

★★★★/7.3 WebStar It isn't the fastest Mac Web server we tested, but it has important features other servers lack: suffix mapping, file aliases, Apple events, remote management, multiple-server support, and threaded execution. WebStar's good performance, features, and reliability offer a winning combination. **Company:** Quarterdeck/StarNine. **List price:** \$795.

STAY ON THE WEB

MAKE YOUR INTERNET SITE PAY OFF

Who would have thought that the anarchism of the Internet would prove so attractive to corporate America? The Net is as raw as any frontier—difficult to regulate effectively, unpredictable, and fueled by idealism and the spirit of exploration. Still, the lure of profit has turned tens of thousands of small entrepreneurs and mainstream, conservative businesses alike into virtual homesteaders, prepared to absorb losses today to harvest big rewards in cyberspace someday.

What does the Net offer business right now? Not a developed market, but attractive market potential. Not a polished sales channel, but a rough and powerful system that can be shaped to fit a variety of needs. In a leaner, harder global economy, the Internet is a new conduit for communications—it thrives on the entrepreneurial energy behind many dynamic companies. Bringing your business to this global network extends your reach and gives you access to a wealth of information with relatively inexpensive technology.

But turning promise into productivity and profits just isn't as easy as plugging your LAN into the Internet or setting up a Web server. To integrate the Internet into your

business, you need a cohesive approach that fully maximizes your chances to improve on your investment.

The framework for success varies from company to company and is in a state of constant flux, but a wide range of businesses have begun to understand how a combination of automated E-mail and effective Web sites can help a company reach new customers, stir up interest in its products and services, and even ultimately reduce its overall workload.

Start with Automated E-Mail

Because it is easy, fast, cheap, and efficient, automated E-mail is usually a good place to start your business Internet presence. Similar to a fax-on-demand system, an automated E-mail server generates an instant response, sending product or service information directly to your customers. E-mail is cheaper than a long-distance phone call, it is more flexible than a fax, and it allows you to send in seconds a 150-page document

that might otherwise have required FedEx delivery. All these things save you money and can create a strong online presence that encourages interaction and a more responsive business environment.

This service can easily be arranged by your Internet server provider (ISP). Or if you already have your own server, look at ListStar, from Quarterdeck/StarNine Technologies (510/649-4949, info@starnine.com; \$499 for SMTP version, \$199 for POP version). WebStar, the company's Mac Web server software, combined with ListStar, provides the easiest and most effective solution for Mac-based Web servers (see the feature "Get On the Web," elsewhere in this issue). It's a relatively simple matter to update information quickly, add more E-mail addresses, and get timely information to your customers 24 hours a day.

The biggest drawback to E-mail servers is the way your information is displayed. You are limited to plain text, and you can't offer graphics easily. E-mail bounce-back doesn't offer the flexibility of a good Web page. Once the exclusive playground of the technically adept, the Web is coming to the desktop, in

BY MATTHEW HAWN

much the same way that publishing did in the mid-eighties (for a primer on Web publishing, see "Build Your Own Home Page," *Macworld*, November 1995).

Web Advertising and Marketing

As appealing as automated E-mail can be, it barely taps the Internet's potential as a way to communicate and build a business. For big companies, a corporate Web site is becoming a business necessity, while small companies are beginning to realize the Web's potential to reach new customers and even to compete more effectively against larger companies.

A Web page is accessible from networks all over the world, 24 hours a day. Thanks to HTML's simple standards, the Web reaches most users, without regard to platform. You can also factor out major distribution expenses, such as for printing and mailing, reducing your overall expenditures as well.

The key to a successful Web site involves combining easy navigation and attractive graphics with interaction, and spicing up your image with enticing premiums or nov-

Valentine's Day. Godiva collaborated on the design and implementation of the site with a contractor that updates the message and handles the mechanics of the site with a staff of three to four people at any given time.

The Web has the potential to reach an extremely lucrative demographic audience: most surveys suggest that people who browse the Web are well educated and have lots of disposable income. Even if you never intend to sell online, you can reach many customers who are likely to buy your products offline. While Godiva realizes no profit from direct sales online, the company attributes a marked increase in in-store sales to the Web site.

Nolo Press publishes self-help legal books and software, a market that has traditionally relied on printed catalogs to sell products. Nolo now runs a Web site that publishes in-depth features and news to complement and enhance its offerings. The company recognized that its audience closely parallels the developing demographics of the Web—well educated, do-it-yourselfers—and that a simply designed site, rich in legal informa-



ties to keep customers coming back again and again.

Godiva Chocolatier offers a good example of the current state of advertising on the Net. The Godiva Online Web site (<http://www.godiva.com>) offers online shopping via a digital catalog, product descriptions, and information on the company's many stores all over the world. This material simply mirrors the company's print catalogs, but the site also offers recipes and stories and a clever E-mail-based gift-reminder service that can prompt you to buy truffles for your sweetheart two weeks before

Valentine's Day. Godiva collaborated on the design and implementation of the site with a contractor that updates the message and handles the mechanics of the site with a staff of three to four people at any given time. The Web has the potential to reach an extremely lucrative demographic audience: most surveys suggest that people who browse the Web are well educated and have lots of disposable income. Even if you never intend to sell online, you can reach many customers who are likely to buy your products offline. While Godiva realizes no profit from direct sales online, the company attributes a marked increase in in-store sales to the Web site.

Making Your Web Site Effective

A good Web site can open up a whole new market for you, but remember, increasingly the opposite is also true. A poorly designed site can drive people away in droves. The Web is a new kind of medium. What works in print or television may fail abysmally online. A good Web site is not unlike a successful piece of software: both need an intuitive interface, a coherent design, and absolute reliability.

Not surprisingly, software companies have some of the best-designed advertising sites on the Internet. Berkeley Systems'

Web site, Toasted (with reference to the company's flying-toasters screen saver, <http://www.berkys.com/>), offers graphics and current information on the company's products, plus customer support, downloadable demos, and free software. Toasted was designed in-house, and a part-time staff of eight maintains the site in addition to doing other jobs at the company.

The site's strong visual sense matches the company's products and aesthetic while taking some chances with new technology to stand out from the crowd. For instance, Toasted recently produced a 1940s-style radio show called Toast Opera with a

TEN STEPS TOWARD A SOLID NET PRESENCE

To stand out from the hordes of businesses arriving each week on the Internet, you need to create a strong online presence. While akin to image advertising, which attempts to create a personality for your business, a company's Internet presence should do more. To gain the respect of people who use the Internet, your business needs to participate and interact with the Internet's culture and accepted practices. And your site should reflect that. Here are ten steps that will help you get started.

1. Encourage interaction. Include E-mail addresses and forms for suggestions, kudos, and complaints. In some cases, it may even be appropriate to post visitor responses in an area of your Web site. Be sure to respond within 48 hours, even if it's just to say that you received the message.

2. Start small and grow. Trying to create an epic site in one fell swoop can make your site feel prefabricated and false. Let it grow

and find its own shape gradually.

3. Dedicate adequate resources. The Web is an ongoing project and requires cultivation and dedicated staffing. An unresponsive or unreliable Web site is worse than no Web site at all. The Web is a 24-hour service and most sites need three to four regular (though not necessarily full-time) gardeners, including a technician to tend the Web server.

4. Foster personality. Remember the people behind your site. Personal pages are some of the most commonly hit pages on business sites. They give your venture a human face.

5. Surf early and often. Take the time to explore the Net and learn its history and customs. Encourage your staff to be active in online forums that relate to your business. This can help build your reputation online. When posting to newsgroups or responding to E-mail, your staff should include your firm's Internet address(es) as part of their signature.

6. Contribute to the Web's interconnectivity. Add value to your site by providing links to other Web sites that relate to yours. If you sell fishing lures, link to a page that details the National Parks' best fishing spots. The owners of those sites may in turn link to your site, generating more traffic.

7. Respect your visitors' time. Most people make online connections from home via a 14.4-Kbps modem, so keep your site's graphics small and easy to download. Expedite visitors' ability to find what they want at your site with good navigation and search tools (see the screen shot "Text-Only for Fast Loading").

8. Update your site regularly. Web pages are always under construction; viewing them as works in progress increases the creative dynamism of your site. Elements that change regularly—a joke of the day, or offer of the week—will increase your online traffic.

9. Sponsor contests and online-only promotions. A sure way to attract more visitors is to give things away. A monthly premium, free promotional materials, and special online sales can greatly increase attention to your Web site. Make your contests interactive and fun—ask visitors to answer trivia questions or write a short E-mail essay, for example.

10. Make your Web site URL as commonly known as your phone number. Promote your site address on your business cards and advertising. You can do this online by registering your site with Internet directories, such as InfoSeek (<http://www.infoseek.com>), Yahoo (<http://www.yahoo.com>), and WebCrawler (<http://webcrawler.com>).

Nolo Press Product Catalog

Books, Software, Audiotapes and T-Shirts

- Business and Workplace — Business law A to Z, including start-up partnerships, corporations & trademarks, workplace rights & benefits
- Estate Planning — Estate planning with 8 more
- Family Matters and Services — Couples, kids, adoption & divorce, Social Security & long-term care
- Homeowner/Landlord/Tenant — Buy, sell, rent, and protect your home
- Immigration — Green cards & citizenship
- Intellectual Property — Establishing & protecting intellectual property
- Just for Fun — Humor books, toys, T-shirts
- Money and Consumer Matters — Consumer rights, consumer protection, credit, debts, insurance, taxes, bankruptcy & more
- Represent Yourself In Court — Representing yourself in small claims, civil & traffic court

Get printable order form—If you'd rather not order online, you can print out an order form and mail it or fax it to us.

View shipping and handling policy — There are lots of ways to get our product to you; you can tell us what works best for you.

How to reach us—Comments, suggestions, problems? No matter what, we'd love to hear from you.

Nolo Press No-Hassle Guarantee

Text-Only for Fast Loading Nolo Press (<http://gnn.com/gnn/bus/nolo/>) uses a simple—mostly text—design that loads quickly even at 14.4 Kbps. It's organized by subject, and the lower half of the screen features links to ordering, policies, and contact information.

serialized story in streaming digital-audio formats like RealAudio from Progressive Networks (206/447-0567, support@progenet.com; prices vary) and TrueSpeech from the DSP Group (408/986-4300, webster@dsg.com). Such clever and original content keeps visitors coming back.

Experimenting with the Web can be a great way to learn about this new medium, but you should judge the value of new technology like digital-audio radio in the context of your business, not only for its gee-whiz factor. Choose the technologies that complement your business. If you sell toothpicks to restaurants, it probably doesn't make a lot of sense to bother to provide digital-audio files on your Web site. On the other hand, for a publisher of books-on-tape, an audio component could be a tremendous selling point. Sample clips from your best-sellers or your new titles could draw repeat visitors who want to stay up-to-date.

When Hot Hot Hot, a small store in Pasadena, California, decided to advertise some of its spicy foods online, it worked with a contractor to create a fun Web site. The interface is bright and colorful, matching the store's style, while allowing visitors to view the products in variable layouts (see the screen shot "Spicy Views"). In addition to online shopping options, Hot Hot Hot runs contests and includes E-mail links for customer feedback. The company uses that feedback to make changes in its product offerings—recognizing the Web's capacity to provide instant and continuous marketing data about what works and what fails.

Another potential benefit of an Internet business site is the ability to gather information about your customers via surveys and contests. But be careful. The Internet community frowns on unsolicited advertisements and even perceived breaches in privacy. Selling your E-mail mailing lists to others or sending promotional E-mail can get you into trouble fast with customers or even bring on a deluge of flames. Surveys and feedback forms that respect your visitors' privacy, however, can help you get good information on the services that your customers want. Consider surveys that don't ask for detailed personal information, and always be very clear and open about what you intend to do with the information you gather.

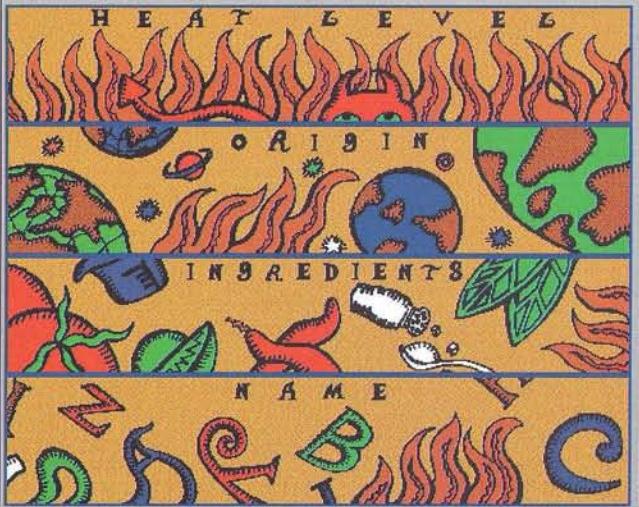
From Sales to Profits

These techniques work well to build awareness of your products and communicate with customers, but be realistic about your investment. Few companies have figured out how to sell products online, possibly because few consumers have become comfortable buying online as yet.

Bear this in mind as you develop your Web business plan: it could take quite a while to recoup initial costs. Techniques for connecting your business to the Internet vary widely. If you choose to host and maintain your own server, look to spend anywhere from \$5000 to \$20,000 on hardware, including the server, router, and extra RAM. Setting up an Internet connection runs from about \$1000 to \$5000, plus monthly line costs of \$100 to \$2000, depending on the speed of your connection (see "Get On the Web").

Some ISPs offer colocation services for Internet servers, which cost about \$1000 to set up, with monthly fees from \$1000 to \$2000 for access to T1 connections. You lose a lot of flexibility with a colocated server and have to rely on remote access to make most changes to your site.

Sauces organized by:



Spicy Views Hot Hot Hot Online (<http://www.hot.presence.com/hot/>), an online catalog dedicated to hot, spicy food and chilies, run by a small retail shop, offers flashy graphics and multiple views of product information to draw customers in.

Easy Search Tools CDnow's (<http://cdnow.com>) search interface allows fast and straightforward searches for the company's CD titles by artist, CD title, song title, or record label, and sorts the results according to your tastes. The results are then hyperlinked to more information and graphics that relate to the topic.

If you don't have a Web expert on staff, expect to pay consultant fees of \$100 or more per hour. At start-up, consulting fees will range from a few thousand to tens of thousands of dollars as you design the information structure of your site. Designers who understand the graphics needs of the Web will charge similar fees.

And while Macs have an inherent security advantage over more-open Unix systems, if you plan to put sensitive information on a Web server that's accessible over the Internet, add the cost of a security consultant who can help you protect your data from prying eyes.

In the long run, your largest expense will be staffing. A large,

multifaceted site requires at least one full-time employee and two to three part-time staff to help with updating and maintenance. Experienced Web masters are paid anywhere from \$30,000 to \$80,000 per year.

So it's easy to see that crossing over to profits after these expenses can take a while. Most companies with a Web presence view it as a long-term investment in a new market or as a worthwhile marketing venture. As they gain experience and build their Web reputations, they expect profits to eventually follow. Others are content to treat the Net as an electronic newsletter for the time being, experimenting with this new medium's rhythms and patterns.

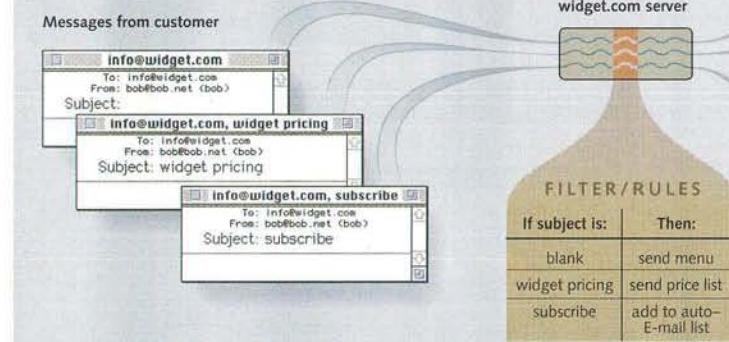
A handful of companies have taken the plunge and are investing in the Web as a primary sales channel. CDnow, one of the first companies to set up a virtual storefront on the Internet, sells compact discs, videos, and other music products. Key to its

why you want to be on the Net and what resources you can dedicate to your Web site. Be modest at first but build your system for easy growth.

The most thoughtful business plans also exploit the Web for internal company use. Focusing inward, a rapidly growing number of companies use in-house Web sites as an extension of their LANs and WANs, in pursuit of alternatives to more expensive options like Lotus Notes or inadequate office E-mail products. Using HTML and the basic Internet mail protocols as core technologies, these companies are experimenting with shareware and inexpensive Web browser software to distribute hyperlinked human-resource documents and training materials (like interactive job listings), while providing a centralized site for electronic data. And software developers are taking notice. With its recent purchase of Collabra Software, a collaborative-discussion company, Netscape

E-MAIL ON DEMAND

Automated E-mail—based on dedicated Internet mail packages such as StarNine/Quarterdeck's ListStar, standard E-mail programs such as CE Software's QuickMail, or custom options from Internet service providers—offers 24-hour customer service similar to that of a fax-back system. On-demand systems operate by filtering keywords in the subject line or body of the sender's message, then responding based on a series of preset rules. In this example, a widget company provides product information and marketing materials, and automates mailing-list functions for regular correspondence.

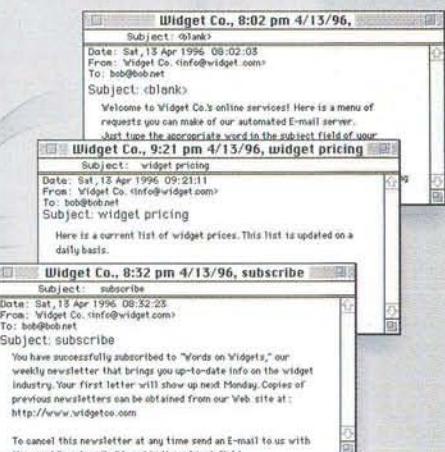


strategy is a searchable database of nearly 200,000 products located in four different warehouses. Equally important is the flexibility of CDnow's interface, which displays search results by artist, genre, or title (see the screen shot "Easy Search Tools"). CDnow adds value to the service by including a music guide and a regularly updated online magazine that encourages shoppers to learn about the artist and the genre. CDnow has a staff of 14 people; 4 of them are dedicated to design and programming for the Web site. The company is so confident in the growth of the Web that it plans to nearly double its staff in coming months. CDnow is also one of a handful of companies willing to invest in advertising links on other Web sites to increase traffic and, hopefully, sales.

The Last Word

A successful Internet presence, like any successful business, starts with a solid plan. Many businesses launch a Web site without the resources to support its maintenance and growth. First decide

Responses to customer



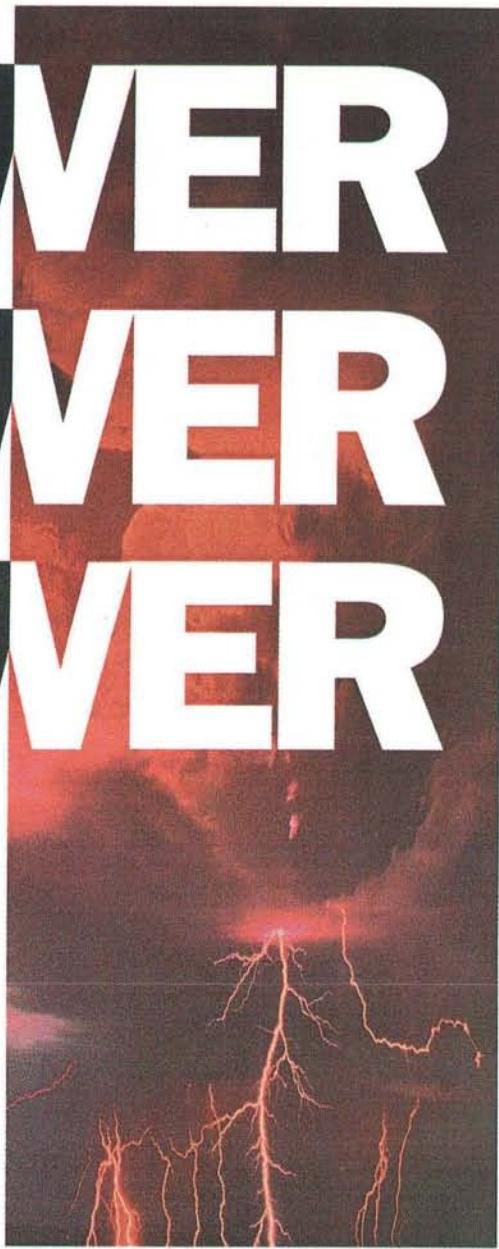
Communications is aiming squarely at the groupware market, and you can expect other entries into this new software market later this year.

With few exceptions, the most successful business sites on the Net are sticking to basic HTML and eschewing the Netscape and Microsoft extensions to the 2.0 HTML standard (see the *NetSmart* column elsewhere in this issue). By doing so, these sites reach a wide audience on all platforms.

In the end, the most savvy companies using the Internet have developed their Net presence organically, learning and adapting to this rapidly changing medium. They budget high enough to show a solid Web presence and weather the frustration of evolving technologies and standards. And they'll be among the first to reap the Web's rewards. ■

MATTHEW HAWN (matthew@www.macworld.com) is production editor for Macworld Online and produces Radio Macworld and GameLine for the Macworld Web site.

POWER FULL COLOR POWER FULL NETWORKING POWER FULL PRINTING



Actual sample printed on the QMS magicolor CX Laser Printer

The QMS® **magicolor CX Laser Printer** • From \$5799*
600x600dpi with Microfine Toner • Letter & Legal
6ppm/Color • 12ppm/b&w • CrownCopy™ Copier
Option • Network-Ready • Serverless Printing

Add this powerful color laser printer to your business. The power to bring documents and images to life. In crisp b&w and vivid color. From any platform. Any protocol. By anyone on the network. The QMS magicolor® CX Laser Printer—available in 8, 20 and 32 MB versions—starting at \$5799. Make your next statement a powerful one. Call QMS today for your FREE "Network Printing for Professionals" Interactive Disk
800 392-7559 Dept. 5097.
Internet: <http://www.qms.com/>

QMS

Printers for Professionals.

For service on QMS or other products, call 800 762-8894 (U.S.) • Q-Fax 800 633-7213 • Canada 800 991-2000 *QMS Reference Price (U.S.) QMS, the QMS logo, magicolor and CrownCopy are trademarks or registered trademarks of QMS, Inc. One Magnum Pass, Mobile, AL 36618, 334 633-4300. © QMS, Inc. 1995.

Circle 288 on reader service card

Are you getting the performance out of

New Back-UPS® Pro™ increases productivity and peace of mind.



If you're using a computer, few things are more certain or more discouraging than power problems. If you haven't yet lost productivity and data to a blackout, crashed a hard drive, or toasted a modem, you will. It's almost a statistical certainty.

More than 4,000,000 smart computer users protect against the inevitable with affordable award winning power protection from APC. One prevented problem is all it takes to pay for proper power protection many times over.

Back-UPS Pro, protects all power paths leading to your Mac, keeping your equipment safe from power events including surges, swells, brownouts, and blackouts - and keeping you safe from downtime that power problems inevitably produce. Back-UPS Pro provides high-performance workstation protection, preventing data loss, increasing your system's lifespan, and improving productivity.



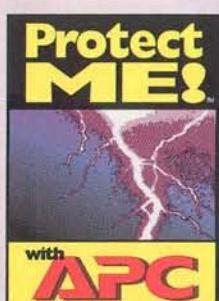
UNMATCHED PROTECTION WITH AUTOMATIC VOLTAGE REGULATION

A study by Bell Labs indicates that 87% of all power disturbances come in the form of a power sag, or "brownout." Most UPSs begin to drain battery at the onset of sags, giving you a few moments to shutdown your

computer. Automatic Voltage Regulation allows you to work through power problems by increasing voltage during brownouts and decreasing voltage during surges without draining battery power. In environments where chronic brownouts and overvoltages are the norm, the line-interactive Back-UPS Pro is essential.

BACK-UPS PRO UPSs FEATURE:

- Instantaneous battery backup to protect your data against a total loss of power.
- Automatic Voltage Regulation (AVR) provides the edge you need for full protection against extended brownouts or overvoltages without draining the battery.
- CellGuard™ intelligent battery management dramatically extends battery life with fast recharge and deep discharge protection. Battery diagnostics warn you before problems occur.
- Batteries are quickly and safely user-replaceable without needing to shut your system down. (Batteries last 3-6 years under normal use).
- \$25,000 lifetime repair/replace guarantee against surge damage to your equipment (see details).
- Built-in phone line/10Base-T network cable surge protection for a bulletproof response to anything Mother Nature sends in your direction.



MORE THAN 4,000,000 SATISFIED USERS SAY "PROTECT ME! WITH APC"

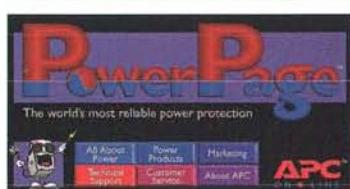
CLOCKWISE: "After 13 plus years in the computer industry (with both Apple and Digital), I have changed directions and now live in the Santa Cruz mountains, where the power is as bad as the view is beautiful," says Harold Stripe. "Now I spend most of my time consulting and writing fiction. The power is the worst during rainy season and brownouts are a daily occurrence. But, not a problem for me since I got my Back-UPS Pro with AVR - now, I work through the rainstorms."

"I am the Product Development manager for Radio Flyer," says Antonio Pasin. "But quite often, I work at home, where I pay for all the equipment...my TV has been zapped in the past (it turned GREEN!). Here, I don't have an extra \$1200 to replace the DAT tape backup...an investment in APC is more cost effective for me. But besides just protecting the hardware, I look at it as protecting my media...I have lots of time invested in my data, and Back-UPS Pro protects that as well. Not to mention the unit is well-designed, easy to use, and APC provides great customer service to boot."

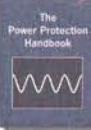
"I am a graphic designer/illustrator, using mostly 9500/132 and 8100/80 PowerMacs, in central Florida, the lightning capital of the world," said Thomas Sessions of Sessions Design in Orlando. "We lose power on a weekly basis and have constant outages...I've used APC for at least 8 years, but Back-UPS Pro is my current favorite - it has a smaller footprint and I can plug in my modem. Before UPSs, when we heard a thunderstorm, you would just hurry and try to get the work done, then just shut down, unplug the machines and take a break...now I wouldn't work without one...particularly in this deadline oriented industry."



So don't wait for the school of high shocks to teach you an expensive lesson about Mac performance. Ask for APC today.



Visit APC's PowerPage™ on the WorldWide Web at <http://www.apcc.com>



Protect Your Mac. FREE 60-page Power Protection Handbook

What are the myths and musts of power protection? What are the 10 most common power protection mistakes? The top tips for adding reliability to your Mac? Get your FREE copy and find out!

YES! I'm interested in Back-UPS Pro for advanced PowerMac protection. Please send my FREE handbook and Back-UPS Pro information.

Name Title:

Company:

Street:

City: State: Zip:

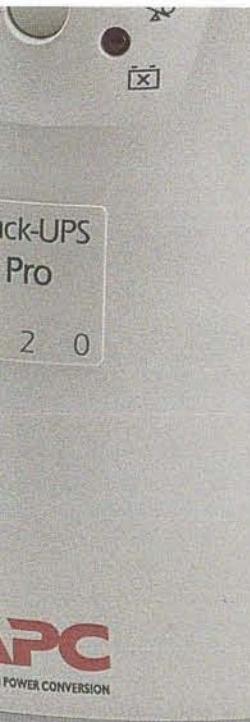
Phone: Fax:

E-Mail Address:

Brands of UPS used?

Macs on site?

Reseller End User



Dept. D7



don't have a UPS, you're playing with fire."

MacUser

"★★★★...Should be standard equipment on every desktop... effective, affordable, designed to last."

- PC Computing

"99 out of 100"

- Computer Gaming World

"Don't take chances. Get the ultimate protection... from APC."

- PC World

CHOOSING THE RIGHT APC PROTECTION

For advanced Mac protection including Automatic Voltage Regulation, CellGuard battery management and phone line/10Base-T protection, choose the Back-UPS Pro. For longer runtime choose a higher VA rating. For basic Mac protection choose from the Back-UPS® family.



Back-UPS Pro: Advanced Mac Protection Perfect for PowerMac



Back-UPS Pro
with PowerChute® Software for Macintosh®



Back-UPS 600
UNINTERRUPTIBLE POWER SUPPLY

Model	VA Rating	List Price
Back-UPS Pro PNP 280	280	\$199
Back-UPS Pro PNP 420	420	\$339
Back-UPS Pro PNP 650	650	\$419
Back-UPS Pro 1000	1000	\$589
Back-UPS Pro 1400	1400	\$759

Model	VA Rating	List Price
Back-UPS 200	200	\$119
Back-UPS 280	280	\$139
Back-UPS 400	400	\$199
Back-UPS 450	450	\$254
Back-UPS 600	600	\$359
Back-UPS 900	900	\$529
Back-UPS 1250	1250	\$689

APC products have won more awards for excellence than all other brands combined. Call for a Free 60-page Power Protection handbook.

COMPUSA
THE COMPUTER SUPERSTORE™

COMPUTER CITY

APC
AMERICAN POWER CONVERSION

800-800-4APC

Dept D7

fax: 401-788-2797 / PowerFax™: 800-347-FAXX

CompuServe: GO APC SUPPORT

Internet: apctech@apcc.com

132 Fairgrounds Rd., W. Kingston RI 02892 USA

The Right Tools for the Job

M A C W O R L D

EXPERTS PICK THE BEST PRODUCTIVITY

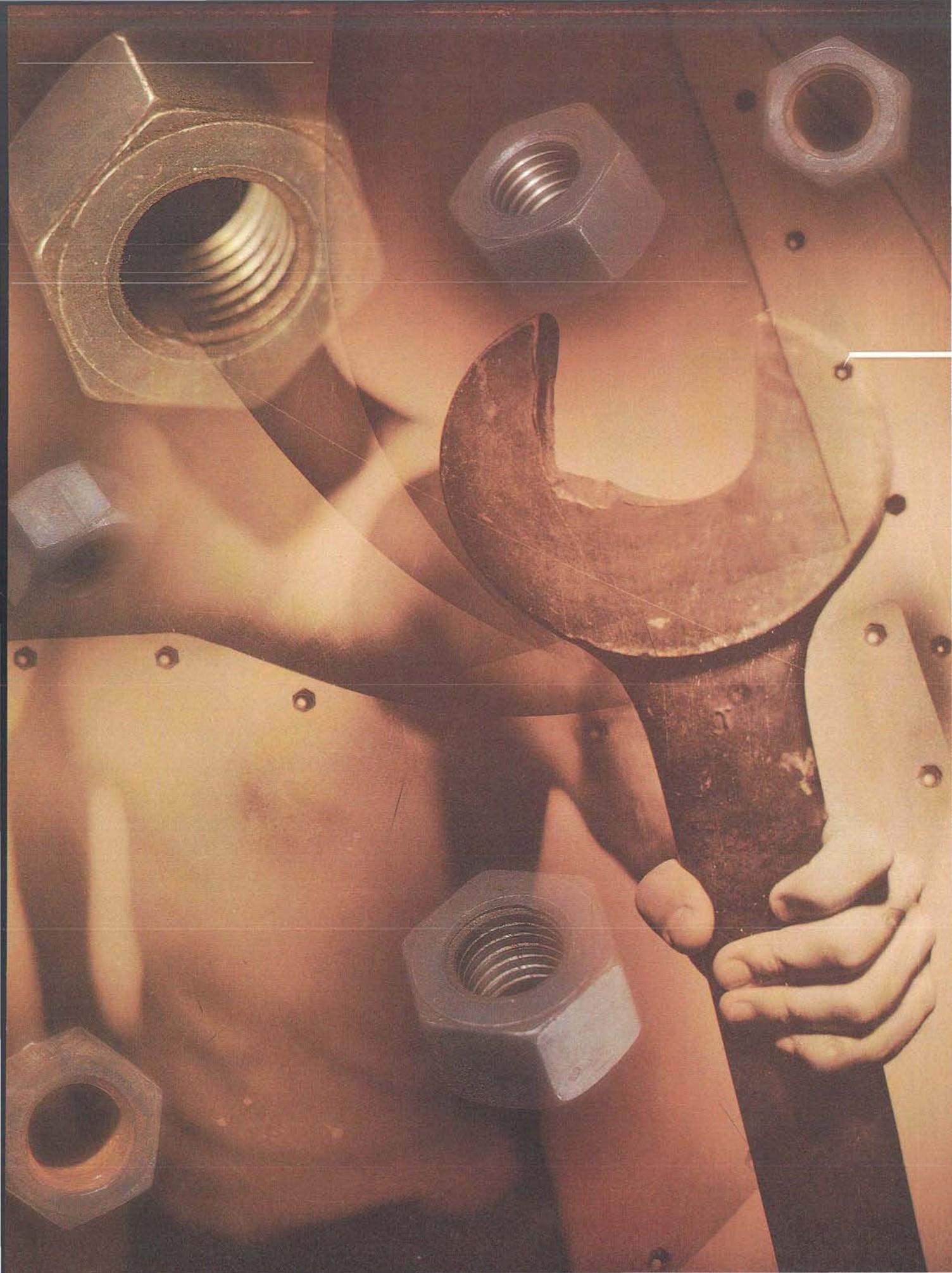
BOOSTERS

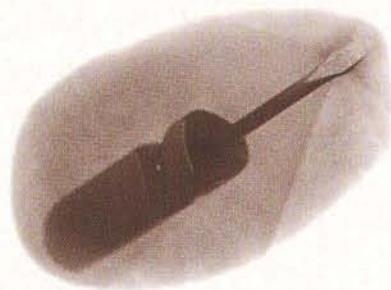
HAVE YOU EVER FOUND YOURSELF WITH FIVE Phillips screwdrivers when what you really needed was a flathead? The old cliché applies with tools: a miss is as good as a mile. And that goes for utility software too. Without the right utility, what should be an easy job can be an onerous—even impossible—task. Having the correct utility is like hitting the nail on the head after years of bent brads and bruised thumbs. The right utilities allow you to work faster, work more efficiently, and save money in the process.

To help you find the best power tools for your work—whether it's business, publishing, graphics, online access, or all of the above—we tested scores of utilities, all highly recommended by *Macworld* experts, to come up with 24 most likely to ease your workload. They range widely in price, but most are inexpensive (usually less than \$100). Most occupy little space on your hard drive and don't require much in terms of RAM. Most are straightforward and easy to use—in some cases, installation is the last time you'll deal with them. Virtually all are available in stores, catalogs, or online shareware libraries. What we like best about all of them is that they provide power and convenience well in excess of their modest proportions.

Working on a Mac without a well-chosen set of utilities is a little like using a power tool with the electricity turned off—you probably can do it, but why would you want to try? Tell your bean-counters that investing in the right utilities can raise productivity and reduce costs—and use these tools to prove it to them.

BY ROBERT C. ECKHARDT





Universal Utilities

PART I: THE WAY YOU WORK

Some utilities make sense to have, no matter how you use your Mac. Some of them change the way your Mac works—

and the way you work with your Mac.

Conflict Catcher System 7.5 has been known to install over 100 start-up files (extensions and control panels) in a standard installation. Add a few favorite third-party start-up files and hold onto your hat. Crashes, erratic behavior, and other abnormalities are a distinct (and distinctly unpleasant) possibility—unless you use Conflict Catcher 3, the answer to an extension addict's (certainly *this* addict's) prayers. Conflict Catcher allows you to turn start-up files on and off, change the order in which they load, view information about each one, and organize your start-up files into sets for different tasks. At start-up, Conflict Catch-

er tells you which set is loading, identifies your start-up icons by name, and allows you to interrupt the start-up process if you want to install a different set. It also automatically turns off files that bomb during start-up and can help you determine which stealth start-up file is causing a blip on your radar screen.

Now Utilities Two Now Utilities modules are another addiction of mine. The NowMenus module creates standard or pop-up menus containing recently opened or often-used documents, applications, even entire menu bars. It allows you to add or change the key commands (and see your changes displayed) in the menus of most applications, and its "sticky" menus open automatically when the pointer passes over them. The Super Boomerang module adds lists of all recently accessed files and folders to the Apple menu and to the Open commands of your applications. Conveniently, it also automatically highlights the last opened (instead of the first listed) file or folder in the Open and Save dialog boxes. Together these modules add a major collection of minor time-savers that really add up.

DragStrip Launchpads are very popular these days, and for my money the best choice is DragStrip 2. Among its many virtues are multiple palettes (including a current-applications palette for quick switching among programs), large and small palette icons, status bars that display either file or application names (see "Text on the Side"), drag-and-drop icon installation (and editing), pop-up menus (listing folders, documents, and so on), and keyboard navigation. DragStrip's defects—icons that don't

UNIVERSALLY USEFUL

PART I: THE WAY YOU WORK

★★★★★/9.4 Conflict Catcher 3.0.2 Pretty near perfect, and pretty near essential, start-up file manager. Company: Casady & Greene (408/484-9228). List price: \$99.95.

★★★★★/7.6 Now Utilities 5.0.2 Diverse utilities collection with especially useful custom menu module. Company: Now Software (503/274-2899). List price: \$89.95.

★★★★★/8.1 DragStrip 2.0 Feature-packed file launcher well worth the premium price. Company: Natural Intelligence (617/876-7680). List price: \$59.95.

PART II: UNDER THE HOOD

★★★★★/8.7 Adobe Type Manager 3.9 Accurately renders PostScript fonts at all sizes on screen and on any printer. Company: Adobe Systems (415/961-4400). List price: \$39.95.

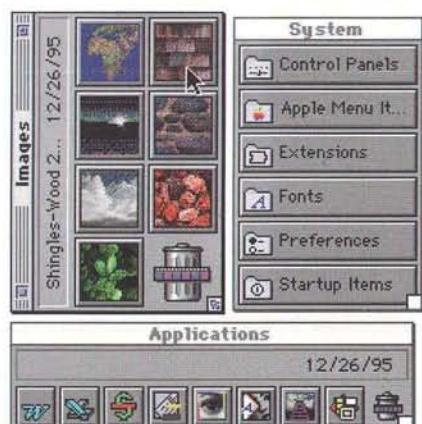
★★★★★/8.9 SuperATM 3.9 ATM's PostScript font rendering plus intelligent substitution for missing fonts. Company: Adobe Systems (415/961-4400). List price: \$69.

★★★★★/8.6 RAM Doubler 1.6 Fools your Mac into thinking it has twice the RAM it actually does. Company: Connectix (415/571-5100). List price: \$99.

★★★★★/7.8 DiskExpress II 2.20 Intelligently defragments hard drives for optimum drive performance. Company: Alsoft (713/353-4090). List price: \$89.95 (or as part of Alsoft Power Utilities, \$139).

★★★★★/7.3 AliasZoo 2.0.5 Locates and fixes orphaned aliases and deletes unneeded ones. Company: Blue Globe Software. Shareware fee: \$15.

★★★★★/7.1 OptiMem RAM Charger 2.1.2 Increases RAM available for applications by allocating it more efficiently. Company: Jump Development Group (412/681-2692). List price: \$129.



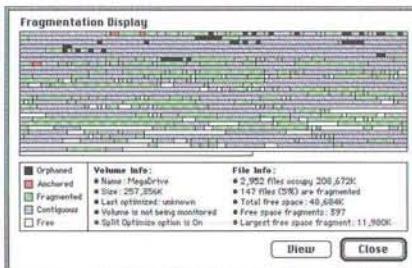
Text on the Side My favorite DragStrip 2 feature is palette titles and status bars that run vertically so you can actually read what they say.

automatically shift position when you resize a palette and a notably poor manual—are relatively minor.

PART II: UNDER THE HOOD

Other universally useful utilities tinker under the hood, subtly (or not so subtly) improving your Mac's performance. Most can be forgotten once you've installed them; a few require your attention from time to time.

ATM Adobe Type Manager (ATM) radically improves the rendering of PostScript fonts at all sizes, both on screen and on any printer; it's essential for just about anyone. In System 7.5, Apple's QuickDraw GX Installer automatically installs ATM. The problem is, most Mac owners don't need memory-hungry QuickDraw GX. If you don't want to jump through hoops to install ATM without QuickDraw GX, most Adobe products include (and usually automatically install) ATM.



How Bad Is It, Doctor? DiskExpress II graphically displays how files are stored on your hard drive and how badly they're fragmented.

You can also order an inexpensive ATM-only disk (\$9.95) direct from Adobe; shrink-wrapped copies of ATM and SuperATM—which can substitute fonts more or less intelligently in documents that use fonts you don't have—cost more (\$39.95 and \$69, respectively) but include small libraries of Adobe typefaces.

RAM Doubler Real RAM can't be beat, but when you can't afford as much as you want (and who can?), RAM Doubler is the answer. Once you've installed this utility, your Mac thinks it has twice as much RAM as it actually does. Amazingly, there's very little performance penalty for this clever trick. Although I have occasionally heard of conflicts with other programs, I have yet to encounter one myself. The one real drawback to RAM Doubler is that it helps only those who run a number of programs simultaneously; if you have one memory-hogging application,

ONLINE HONORS

★★★/6.9 Claris Emailer 1.0v2 One-stop E-mail sending, receiving, and storing, plus a single all-encompassing address book. **Company:** Claris (408/987-7000). **List price:** \$89.

★★★/6.7 GrabNet 2.0 Bookmark manager for Netscape Navigator grabs Web graphics and text. **Company:** ForeFront Group (713/961-1101). **List price:** \$19.95.

★★★★/7.9 StuffIt Deluxe 3.5 Mac, PC, and Internet file compression and decompression. **Company:** Aladdin Software (408/761-6200). **List price:** \$129.95.

you'll have to buy the real thing.

DiskExpress II People don't talk much anymore about disk optimization (reuniting file fragments stored at random throughout a drive), but a defragmented hard drive is still a fast hard drive. I like DiskExpress II best for this task because of its graphic fragmentation display (see "How Bad Is It, Doctor?"), the smart way it stores optimized files according to how much I use them, and the care its programmers have taken to prevent accidental data loss. Even though it runs in background mode, I wait and manually launch DiskExpress just before long lunches or during periods of writer's block.

AliasZoo Regularly cleaning out your stable of aliases will help keep your Mac running smoothly, and sweeping up abandoned and irrelevant aliases is best accomplished with AliasZoo. It verifies all your aliases to ensure they're functioning properly and identifies those that aren't. Any alias, healthy or not, in AliasZoo's complete alias tally can be renamed, reassigned to a new target file, or tossed into the Trash.

OptiMem RAM Charger Hard-core tinkerers who want to squeeze every drop of performance out of their Macs should consider OptiMem RAM Charger, an extension that radically changes the way RAM is allocated to applications. Instead of allowing a program to hoard a big chunk of RAM (the standard Mac method) regardless of what it actually needs, RAM Charger initially gives an application the smallest amount of RAM it can survive on and ladles out more RAM only if it's required. Because your applications use RAM more efficiently with RAM Charger, you can run many

more applications simultaneously. (With RAM Doubler installed as well, the number of programs you can run at once will impress even the most jaded multitasker.) Sadly, some programs don't take kindly to RAM Charger's manipulations; fortunately, you can turn RAM Charger off for these applications but still reap its benefits with all your other programs. RAM Charger works adequately with its standard factory settings and can automatically improve upon some of those settings by watching the way you work, but those with no technical know-how are best off avoiding it, since careful tweaking of its rather esoteric options is the best way to optimize RAM Charger's performance.



Online Utilities

Electronic communications are getting more complex every day. A few well-chosen online tools can reduce download costs and help organize incoming mail.

Claris Emailer The blessings of E-mail can quickly become a curse if you don't have a single, well-designed mail center. That's where Claris Emailer

comes in. Emailer knows how to exchange mail (using its own software) with America Online, CompuServe, eWorld, RadioMail, and the Internet. With a single command (or according to a predefined schedule) it can send and receive all your mail for all your accounts, automatically prioritizing it according to your preferences. It stores all your old mail in a single Filing Cabinet containing a user-defined scheme of folders. Emailer makes great use of the drag-and-drop function for almost everything, and best of all, it offers a single address book for everyone you know, so you never need to think about *how* to contact someone. Emailer is far from perfect—it can't pick up my CE Software QuickMail messages, for example, and handles PPP Internet connections poorly—but even if you get mail on only one service, life online with Emailer is far more efficient than life without it.

GrabNet If you're a serious (or merely half-serious) Web surfer, you know that the one place Netscape Navigator 1.X falls down is in managing large collections of bookmarks (or URLs, the online addresses for Web sites; version 2.0, scheduled for release about the time you read this, addresses this problem). GrabNet fills this gap admirably with its hierarchical list of bookmarks, either working on its own or installing a GrabNet menu in Navigator (see "Caught in the Web"). In Navigator, send the bookmark for the current Web page to GrabNet with a GrabNet menu command. Send a Web graphic, a portion of a Web page, a piece of Web text (all with bookmarks attached), or an embedded refer-



Caught in the Web With GrabNet's Finder-like, customizable hierarchy of folders, you can easily organize hundreds of bookmarks. You can also view graphics or text attached to the selected bookmark.

BUSINESS BASICS

★★★★★/8.6 **Desktop Dialer 1.4.2** Dials phone numbers appearing in any document. Company: Sophisticated Circuits (206/485-7979). List price: \$75.

★★★★★/9.3 **AreaCodeFinder 4.0** Identifies the location (as well as the time zone) of an area code and vice versa. Company: John Calande. Shareware fee: \$15.

★★★★★/7.5 **TypeIt4Me 4.5.1** Automatically expands user-defined abbreviations in any application. Company: Riccardo Ettore. Shareware fee: \$30.

★★★★★/7.6 **MacLinkPlus/Translators Pro 8.06ia** Excellent PC-to-Mac (or reverse) conversions for word processor, spreadsheet, or database documents. Company: DataViz (203/268-0030). List price: \$149.

★★★★★/8.3 **PopupFolder 2.0.1** Improves Finder navigation via ubiquitous pop-up menus. Company: Inline Software (617/938-8088). List price: \$79.

★★★★★/7.3 **Calc+ 2.0** Simple calculator with a resizable, scrollable, editable, printable tape. Company: Abbott Systems (914/747-4201). List price: \$29.

ence to another Web site to GrabNet with little more than a simple point and click. In GrabNet, view the graphics or text attached to any bookmark in the GrabNet list, or double-click on a bookmark to switch to Navigator and go directly to that Web site. GrabNet makes Web navigation with Navigator significantly easier. My only gripe is the lack of a manual; learning GrabNet through its Apple Guide is painfully tedious.

StuffIt Deluxe In the Mac online universe, files are "stuffed" (compressed) for faster transfer. Although it's possible to rely solely on self-extracting files and shareware unstuffers, serious telecommunicators should treat themselves to a copy of StuffIt Deluxe. In addition to near-effortless stuffing, unstuffing, and archive management, StuffIt Deluxe handles a broad spectrum of other Macintosh (BinHex and MacBinary, for example), PC (Arc, Zip), and Internet (uuencoding) transfer formats. If your target audience includes PC owners, stuff your files as usual and direct PC users to StuffIt Expander for Windows (freeware) for unstuffing. Or, since virtually any PC decompression utility can unzip a compressed file, you can create zipped versions of your files (sadly, StuffIt can only unzip files) with easy-to-use ZipIt (Thomas Brown, \$15).



Business Utilities

In business, we all deal with machines other than our Macs, from phones to other people's PCs. Here are some high-efficiency utilities for easy dialing, file conversion, and other business necessities.

Desktop Dialer Recently, I added Desktop Dialer's cigarette-pack-size box to one end of my keyboard's ADB cable, routed my phone line through the box, and told Dialer's software my local area code. Now I need only click on a number (in my Now Contact database—or in any of the dozen or so other programs that work directly with Dialer), or highlight a number and press a key command, and Dialer dials the phone for me. Incredible. Not incredible is Dialer's 20-number memory-dial desk accessory, which is less convenient than the memory-dial in my



Drive-Thru Menus PopupFolder adds instant contents menus to disk and folder icons in the Finder (as shown here) and in Open and Save dialog boxes.

phone. But my greatest disappointment is that Dialer can read numbers only, and not easy-to-remember, hard-to-dial numbers like 1-800/SOS-APPLE.

AreaCodeFinder Other phone hassles—finding the area code when you know only the city, determining the geographic location of an unfamiliar area code, and figuring out whether it is too late (or too early) to call—have been solved by this utility. Enter the name of the city and AreaCodeFinder tells you the area code. Enter an area code and you get the state and cities that use it. There is also a map of North America and its time zones, which displays the current time in each zone and highlights the location of the most recently searched area code. Conveniently, AreaCodeFinder stores all its information in a separate, easy-to-replace data file, which is frequently revised (since new area codes are popping up like mushrooms after a rain) and available online.

TypeIt4Me If your macro needs are modest, consider TypeIt4Me. Easy to use and reliable, TypeIt4Me's forte is automatic text expansion. Once you teach it your shorthand, TypeIt4Me automatically replaces text as you type. You can also create abbreviations for the current date and time and teach TypeIt4Me to correct your most common typos. Don't tell Microsoft, but TypeIt4Me is an inexpensive way to give Word 5.1 a good facsimile of Word 6's AutoCorrect function.

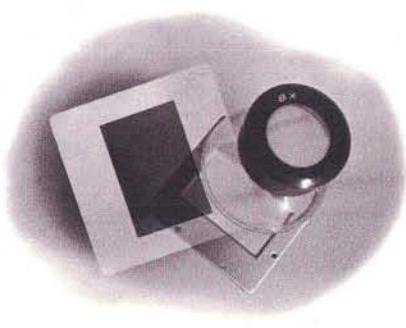
MacLinkPlus/Translators Pro If you regularly exchange word processor, spreadsheet, or database documents with PC users, there's no better way to convert those files than with MacLinkPlus/Translators Pro. Translators Pro makes opening a PC file as easy as double-clicking on it, opening it with your application's Open command, or dragging and dropping it (or a batch of files) on Translators Pro's Document Converter applet. Translators Pro's word processor conversions retain embedded graphics and original format-

ting to a remarkable degree, and its new HTML translator gives you Web pages much as they appear in Netscape Navigator or Spry Mosaic (with embedded Web addresses conveniently appended as footnotes). Translators Pro includes Apple's Macintosh PC Exchange, which allows you to use DOS disks in your Mac's floppy disk drive. (Software Architects' DOS Mounter 95 does the same for any removable DOS media, including SyQuest cartridges and rewritable optical disks.) Also included is DataViz FileView, which (like Abbott Systems' very skillful CanOpener) can extract the text from virtually any Mac, DOS, or Windows document that stumps the translators.

PopupFolder Even with neatly nested folders, digging into or out of them to file or retrieve documents is still a troublesome task. You can greatly streamline folder navigation with PopupFolder, which adds hierarchical menus both to window title bars and to folder and disk icons (see "Drive-Thru Menus"). You can traverse these pop-up menus simply to get to a file, or you can drag a file to move it or copy it, drop it on an application, or install its alias. For instant recall, PopupFolder also allows you to assign keyboard shortcuts—usable in the Finder and Open and Save dialog boxes—to files, folders, and applications.

Calc+ If you're looking for an audit trail, Calc+ is the way to go. This calculator has a resizable, scrolling "tape" with color-coded totals and a one-number memory (hey, that's one more than Apple's Calculator). You can resize the scrolling tape, select the appropriate font and size, insert line-by-line comments, edit previous entries (Calc+ automatically

recalculates any affected sums), and save or print your tape. Desktop publishers, take note: Calc+ also does instant conversions between inches, centimeters, picas, and ciceros.



Graphics Utilities

If it seems like your graphics files are managing you, rather than the other way around, here are some great preview and conversion tools.

DeBabelizer DeBabelizer is a godsend for anyone who needs to work with lots of scans, downloaded images, and the like—but it is devilishly difficult for most mortals to use. DeBabelizer can convert a file to one of 70 graphics formats and can deal with hundreds of files at a time. In the process, it can scale or crop graphics, reduce their color depth, adjust the color palette, and more, using a variety of options. Although it has a clunky interface and poor manual, DeBabelizer does provide excellent color controls, it manipulates QuickTime movies, and now it supports formats used by Web-page designers.

GRAPHICS GOLD

★★★★/7.6 **DeBabelizer 1.6.5** Endlessly talented and exasperating batch processor for bitmapped graphics. **Company:** Equilibrium Technologies (415/332-4343). **List price:** \$399.

★★★★/7.2 **Transverter Pro 3.0.1** Batch-process PostScript files or preview them to catch mistakes before printing. **Company:** TechPool Software (216/291-1922). **List price:** \$395.

★★★★/7.3 **Adobe Fetch 1.2** Catalog graphics, text, and more for easy organization and retrieval. **Company:** Adobe Systems (415/961-4400). **List price:** \$149.

And Honorable Mention Goes to . . .

WHENEVER I WRITE ONE OF THESE CAST-OF-THOUSANDS articles, there are always a number of great performances that end up, for one reason or another, on the cutting-room floor. Here are a few of my favorites.

Suitcase Although it's the best font manager available, Suitcase 2 (Symantec, 541/984-2490) is so old that my manual is yellow with age. A completely redesigned and rewritten Suitcase 3 should be available by the time you read this; if you have a large font collection, be sure to check out this utility.

Tracer If you need to convert bitmaps to Béziers, Tracer (ScanVec, 508/694-9488) can run circles around Adobe Streamline. Unfortunately, Tracer also has a few rough edges: it's outlandishly expensive, it uses hardware-key copy protection, and it sometimes performs erratically.

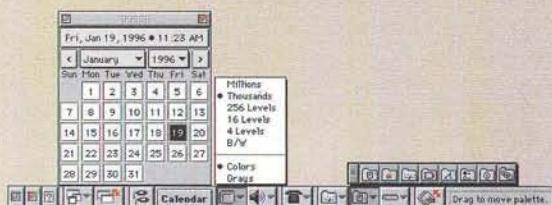
Poser If drawing lifelike figures has you stumped, let Poser (Fractal Design, 408/688-8800) give you a hand. You can twist and turn its wide variety of double-jointed



On Your Toes You can view a Poser figure from any position, change the perspective, adjust the lighting, and select from a variety of surface styles and textures.

body types to create figures in any position (there are many predefined poses, too). Only detailed facial features and hand positions and loose-fitting clothing are shortchanged in this easy-to-use program (see "On Your Toes").

OneClick A macro program in disguise, OneClick (Westcode Software, 619/487-9200) adds button bars to the Finder and any application (see "Who's Got the But-



Who's Got the Button? In addition to launching programs and macros, the buttons on OneClick palettes can open other palettes, pop-up menus, and specialty items such as a monthly calendar.

ton?"). Define buttons by dragging and dropping applications or folders, selecting from a library of pre-defined buttons, defining tasks by example, or programming buttons using AppleScript or OneClick's EasyScript.

theFONDler Although it makes little effort to disguise the guts of font anatomy, theFONDler (Rascal Software, 805/255-6823) can locate corrupt font files and dozens of other problems that mess up print jobs, as well as eliminate font-ID conflicts once and for all. I just wish Rascal would give it a different name. (For more details, see *Reviews*, in this issue.)

EMMpathy EMMpathy (Bill Steinberg, freeware) can locate and correct corrupted data in a 500-series PowerBook battery's Energy Monitoring Module (EMM), bringing apparently dead batteries back to life.

SignatureQuote For communications programs that lack these essential functions, SignatureQuote (Semicolon Software, shareware fee \$10) can stamp your E-mail with one of two ready-made "signatures" and "quote" incoming text (using the angle brackets standard on the Internet) for a reply.

MultiClip Pro Unlike Apple's Clipboard, MultiClip Pro (Olduvai, 305/670-1112) can store as many items as you care to copy into it, and paste them back in the same or reverse order—or you can select and paste a specific item. Conveniently, you can easily operate MultiClip from the keyboard; unfortunately, the program eats up a whole megabyte of RAM.

Speed Doubler If you own a Power Mac, Speed Doubler (Connectix, 415/571-5100) replaces Apple's 680X0 emulator and runs nonnative applications noticeably faster. Like CopyDoubler (in Symantec's Norton Disk-Doubler Pro), it also smartens up the Finder's less-than-intelligent file copying.

Transverter Pro If Béziers are your métier (or your bête noire), you need Transverter Pro. Its major skill is converting raw PostScript (such as a printed-to-disk page-layout file), EPS, or Acrobat (PDF) files—or a piece of a file, or a batch of files—into TIFF, PICT, JPEG, EPS, or Adobe Illustrator format. It can also add screen previews to EPS files that lack them, convert multipage PostScript files into single-page placeable files, and preview PostScript files (if you're conversant in PostScript) to help you eliminate errors before they cost money. Conversion options are limited (compared with De-Babelizer's), manuals need major work, and the conversions aren't always perfect, but in comparison with Photoshop's standard EPS-to-bitmap conversions, Transverter Pro easily came out on top.

Adobe Fetch Theoretically, I could organize all my multimedia files in one huge hierarchy of nested folders (if my hard drive were big enough) and use Photoshop's tiny thumbnail icons to distinguish different images. Practically speaking, I prefer to keep my files where they are, have Adobe Fetch list them all in a master catalog, and maintain my sanity as well as my eyesight. Fetch easily catalogs files (no matter where they're stored) and adds file and folder names to each item's keyword list (you can assign additional keywords as well). I can view a catalog as big-enough-to-actually-see preview images (see "Order out of Chaos") or as faster-scrolling Finder-like lists. Unfortunately, Fetch doesn't allow me to drag and drop items into or between open catalogs. But because it can hand over the reference to a selected file (rather than the file itself), Fetch is an excellent companion to Adobe Page-Maker or QuarkXPress.



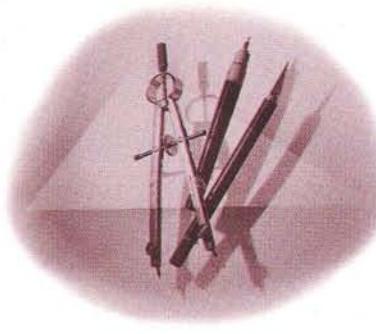
Order out of Chaos Although you can sort Fetch catalog items by name, file type, date added, and so on, you can't drag them into an arbitrary order (such as most to least often used).

PUBLISHING PARTNERS

★★★★/8.5 **TypeTamer 1.1.1** Every conceivable font menu improvement in one well-designed program. Company: Impossible Software (714/470-4800). List price: \$59.95.

★★★★/7.2 **FontMonger 1.5.7** Easy font modifications, from redrawing characters to converting font formats. Company: Ares Software (415/578-9090). List price: \$149.95.

★★★★/7.4 **theTypeBook 4.02b** Creates font reference books from ready-to-print specimen pages. Company: Rascal Software (805/255-6823). List price: \$49.95.



Publishing Utilities

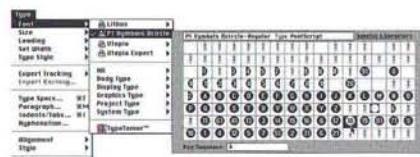
In publishing, managing lots of fonts and tons of typefaces is never easy. Take a look at these three timesaving organizers.

TypeTamer OK, here's the shameless truth: TypeTamer is the best font-menu manager I've ever seen. Somehow, it does everything and does it just right (see "Just My Type"). It automatically groups fonts by family, allows you to organize families into sets (all serif fonts together, for instance), and lets you scroll to a font simply by typing the first few letters of its name. Icons beside each font name indicate whether it's PostScript or TrueType; point to the icon to display either sample text or a complete character-set table from which you can locate any character.

FontMonger I'm not a big fan of messing around with typefaces experts have spent months perfecting, so some things FontMonger can do—converting TrueType fonts to PostScript (or vice versa) and tweaking character outlines—make me nervous. But for font-technology illiterates like me, FontMonger is an able typographic assistant. Use it to move a much-used character to a more conve-

nient key combination, for example, or to create typeset-quality fractions (such as $\frac{1}{2}$ instead of 1/2). More suspect but sometimes unavoidable alterations, such as generating an oblique or small-caps font for a typeface that lacks one, are also easy to accomplish.

theTypeBook Making a typeface reference book is a lot easier with theTypeBook. Its one-typeface-to-a-page templates contain samples of character forms and alternate characters, examples of different point sizes, body copy at different leadings, and tables of characters per pica and capital-letter height. Other templates include full-page, large-point-size displays of a font's complete character set, keyboard layouts (great for pi or symbol



Just My Type For easy access, TypeTamer puts a separate list of the fonts in the current document near the top of the Font menu.

fonts), and catalogs that squeeze as many as 90 typeface samples on a page. You can customize the elements of any page, insert comments alongside any element, and add your business name and logo to the bottom of each page. theTypeBook's finished product is not only handy to have around but also looks quite professional to your clients. ■

Contributing editor ROBERT C. ECKHARDT collects many kinds of small masterpieces, from utility programs to Mexican *retablos* and Zuni fetishes.

You've Got Two Seconds To Find Exactly What You Want On The Internet.

Ready, Go.

<http://guide.infoseek.com>

Easier to use and more accurate than any other search service.* Blazingly fast. In fact, no other search service is proven to be faster. Rated #1 and voted Most Valuable Internet Tool of 1995 by PC Computing. With WWW pages, Usenet news, FTP and Gopher sites, this is the only source you'll ever need for Internet information. No matter what you're searching for, you'll always get excellent net results with Infoseek Guide. Go ahead. Give it a try.

infoseek®
You Found It.

*PC Computing tested Infoseek against 14 top search engines and gave it the highest rankings for usability and effectiveness (September 1995).

Infoseek, Infoseek Guide, and the Infoseek logo are trademarks of Infoseek Corporation, which may be registered in certain jurisdictions.
Copyright ©1995 Infoseek Corporation. All rights reserved.

Circle 47 on reader service card

Secrets

Comedy of Errors

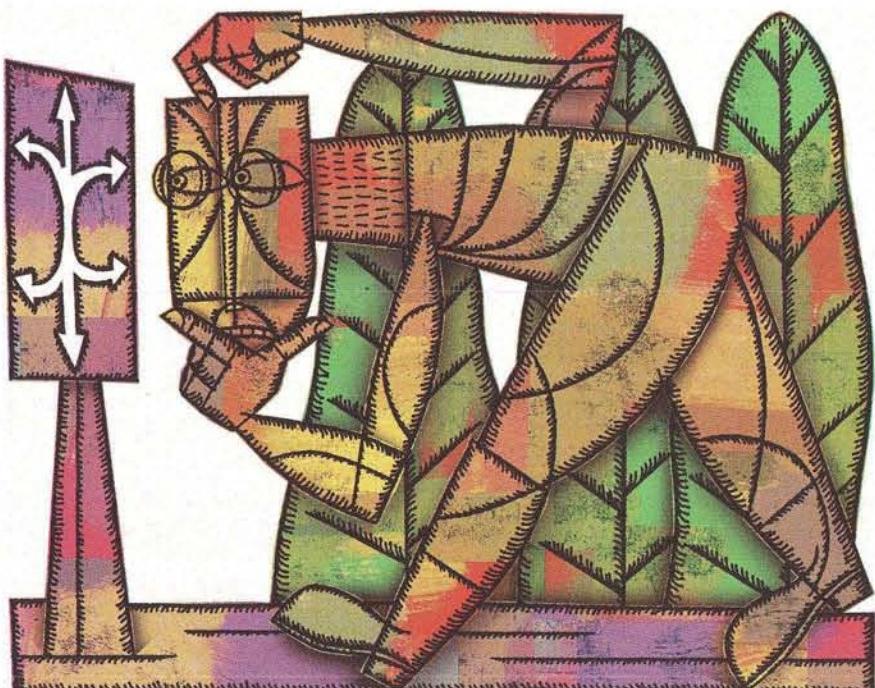
WHAT YOU REALLY LEARN FROM YOUR MAC'S MYSTERIOUS ERROR MESSAGES

by Joseph Schorr

The next time you find yourself staring at your Mac's frozen screen with a mysterious Type 1 error message flickering over your lost work, think about this: The Macintosh Operating System is capable of displaying more than 280 error messages. If you've only seen a handful of them, cheer up. Think of the hundreds you've managed to avoid.

OK, that's not terribly comforting. Maybe you've never had your day ruined by the sinister "Couldn't find 5 nybbles in 200 tries" (Error -66). Still, those morbid error messages you do see—and the crashes that accompany them—can make your blood run cold. But what if you really understood what all those messages and code numbers meant? Wouldn't that help you zero in on the root cause of your crashes? Wouldn't you be able to head off such tragedies in the future?

Don't kid yourself. Oh, it's true that every one of Apple's error codes does have a precise meaning that isolates a specific problem on your system. But frankly a lot of these cryptic error messages don't mean much to anyone but programmers. On the other hand, some error codes do contain clues that can help you track down a stubborn problem. Serious troubleshooters should know which codes to ignore and which provide genuine clues. Here are a few guidelines.



Don't Believe Everything You Read

It would be great if your Mac could tell you exactly what went on in the aftermath of a crash. In reality, the Mac's error codes aren't nearly that precise—or enlightening. For one thing, the error definitions themselves provide you with little information that you can actually use unless you're a programmer. Knowing that an "unimplemented core routine" (Error 12 or Error -4) caused your crash doesn't shed much light on why a program keeps crashing. Most error

codes contain technical information a programmer could use to pinpoint a glitch in code, but they don't give you much to work with.

The second—and even more frustrating—problem is that the error messages you get in a crash are often flat-out wrong; for example, the Mac might say you had an "illegal instruction" problem (Error 3) when in reality you simply used up all your RAM. Following the clues given by an error message could lead you down a blind alley.

WARNING! YOUR DAY HAS BEEN UNEXPECTEDLY RUINED

Here are a few other common error messages and the problems they point to:

"APPLICATION UNEXPECTEDLY QUIT" Applications quit without warning when they either run out of memory or encounter a conflict with an incompatible (usually out-of-date) system extension. A Type 1 error often means your program ran out of memory. The application tried to access a chunk of memory that didn't exist or needed more RAM than was available. You can remedy the problem by allocating more memory to the program, adding more RAM to the system, or simply restarting your

Mac so the RAM available is in contiguous chunks.

A Type 2 error is also related to memory use. The Mac tried to store a chunk of data in an address that couldn't hold it. A Type 3 error is called an illegal instruction error. It means the Mac tried to execute an instruction that isn't part of its standard vocabulary. The cause may be an out-of-date system extension or hard disk driver.

ERRORS 17 THROUGH 24 These errors indicate that the Mac tried to access one of the standard routines in the System file and couldn't find it. In all probability, that means you have a corrupted System file.

Try installing a new System file to replace the damaged one.

ERROR 25 Once again, you've run out of RAM.

ERRORS 26, 27, 30, 31 Apple says these errors tend to appear when your System file has gotten mangled. Replace it.

ERROR 28 This error is accompanied by the message "Stack ran into heap," but that's just another way of saying you ran out of memory.

TYPE 11 ERROR Don't look for specifics here. On a Power Mac, a Type 11 error can mean almost anything. It simply

refers to an error that occurred in reading native PowerPC code. Usually it means a bus error, an address error, or an illegal instruction.

ERROR -39 A -39 error is usually accompanied by the message "end of file" or "no additional data in the format." This error points in the general direction of a corrupted file. It means that the Mac started to process a file but couldn't finish reading it. If you encounter this message at start-up, it could mean that the Launcher has become corrupted. All you have to do is drag the Launcher control panel into the Trash and reinstall it.

The Bad F-line Fallacy

Here's a classic case of a fallacious error message: Power Macintosh users frequently get two error messages, one that says "FPU not installed" and another that says "bad F-line instruction." They get both of these closely related messages despite the fact that (1) Power Macs do have an FPU (floating-point support has been integrated right into the PowerPC

chip), and (2) they aren't using a program that requires an FPU anyway.

Why does this happen? One reason is that on 680X0 Macs, the CPU and the FPU send code back and forth using a special set of instructions (called F-line instructions because they always start with the letter *F*). Every so often, due to one glitch or another, your Mac may encounter a piece of code it wasn't sup-

posed to read—code that, coincidentally, starts with the letter *F*. The CPU interprets the code as an F-line instruction. Of course, your Mac can't carry out this instruction, because the Power Mac doesn't have a separate FPU chip waiting to receive the instruction, so you get a "No FPU installed" or "Bad F-line instruction" message. In reality, the cause was most likely an extension conflict or a program that needs to be upgraded, and has nothing to do with FPUs or F-lines.

When All Else Fails . . .

There are hundreds of error messages you may see on your Mac, but the most common are caused by only a handful of problems: a system extension conflict, a corrupted file, or lack of memory. If you're plagued by relentless Type 1, 3, or 11 errors, follow these troubleshooting procedures to wipe out the problem.

1. Turn off all extensions by restarting the Mac while holding down the shift key. If the error disappears, you know it's a corrupted or out-of-date extension or two conflicting extensions. Try to isolate and get rid of the conflicting extension. (You can use System 7.5's Extensions

- Manager or a third-party utility such as Casady & Greene's Conflict Catcher 3 to turn extensions on and off selectively.)
2. Update the hard disk driver. Older SCSI disk drivers are known to conflict with SCSI Manager 4.3 and generate some of

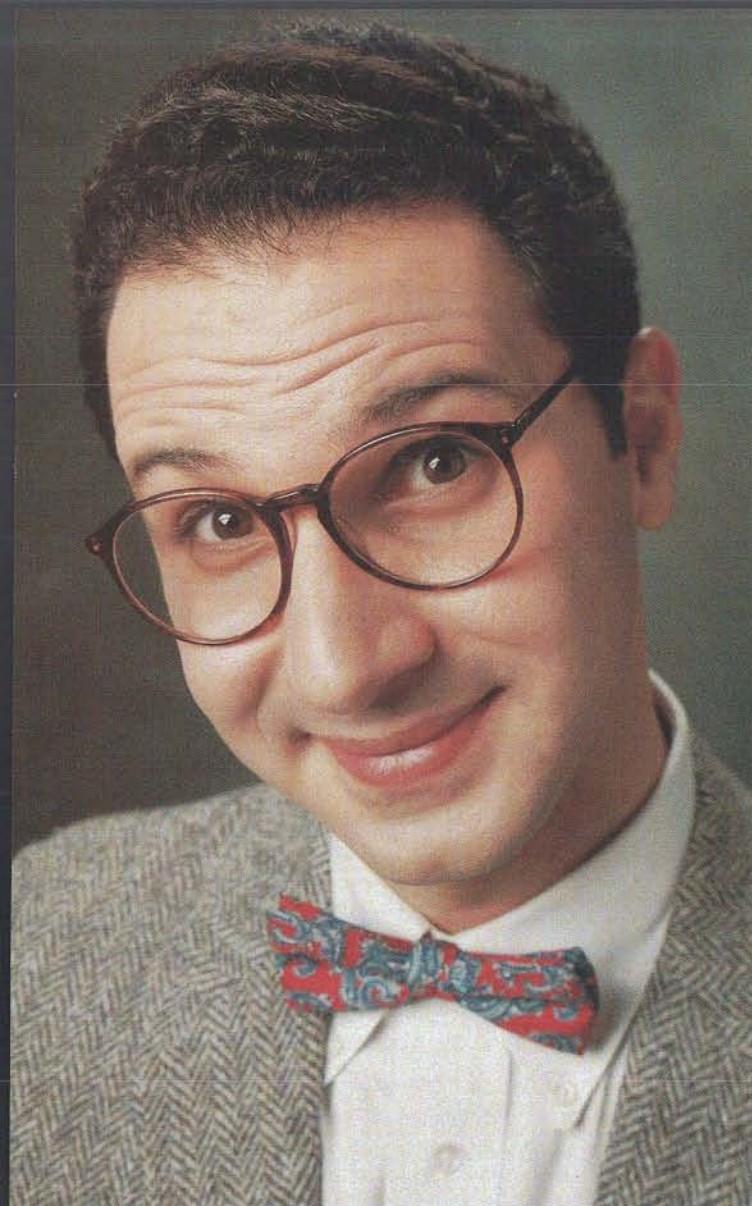
the errors described above. You can update the driver by running Apple HD SC Setup version 7.3.5 or by using a third-party drive-formatting utility.

3. Zap the Mac's parameter RAM (PRAM) by restarting the Mac while holding down ⌘-option-P-R. (PRAM is the chunk of memory used to preserve various preferences and settings on your Mac.)
4. Perform a clean install of the system software, completely replacing the entire System Folder.

Decoding Error Codes

Does this mean all those error codes are worthless? No; in many cases the codes can point you in the general direction of a problem. In the example given earlier, the "unimplemented core routine" (Error 12) is a strong indicator that you're dealing with an honest-to-goodness software bug. It means the programmer placed a temporary break in the code for use in debugging but forgot to remove it before releasing the final code. If you can reproduce the error, it's a pretty clear indication that you need to contact the software vendor to report the bug and ask for a patch or an update. ■

Contributing editor JOSEPH SCHORR is co-author of *Macworld Mac and Power Mac Secrets*, third edition (IDG Books Worldwide, 1996).



If your output
could be
close to perfect
or perfect,
which would
you choose?

The new
Accel-a-Writer 8300
featuring **X•ACT™**
{XANTÉ's Accurate
Calibration Technology}

Perfect output at a surprisingly perfect price.
For the first time in laser printer history, the new Accel-a-Writer 8300 with **X•ACT** allows you to calibrate the accuracy of your printer to within the width of a single dot. No other printer on the market delivers these exacting standards. And true **Adobe™ PostScript™** offers another standard of perfection with high performance and incredible output accuracy.

Next, **1200 x 1200 dpi** output turns your Accel-a-Writer 8300 into a desktop plain-paper imagesetter with capability to **print up to 12" x 25"** output.

The new Canon JX engine is at the heart of

this leading-edge printer, along with XANTÉ's **Enhanced Screening Technology**. This feature allows you to further fine-tune your output quality by providing 40% more levels of gray when enabled for exceptional halftone quality.

So ask yourself... if your output could be *close to perfect* or *perfect*, which would you choose? We think you know the answer. XANTÉ's new Accel-a-Writer 8300. There's no other printer like it.



Circle 112 on reader service card

 **XANTÉ**
Innovations In Output

1-800-926-8839, ext. 2125

Dealers call ext. 2126. FAX: 334/476-9421.

MasterCard/VISA/American Express/Discover Card accepted.

Optional on-site service provided by XANTÉ,
in partnership with Olivetti North America.

olivetti



Adobe PostScript

 **AT&T**
Capital Corporation

©1996 XANTÉ Corporation. XANTÉ and Accel-a-Writer are registered trademarks of XANTÉ Corporation. Adobe, PostScript, and the PostScript logo are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions. Other brands and product names are trademarks or registered trademarks of their respective holders.

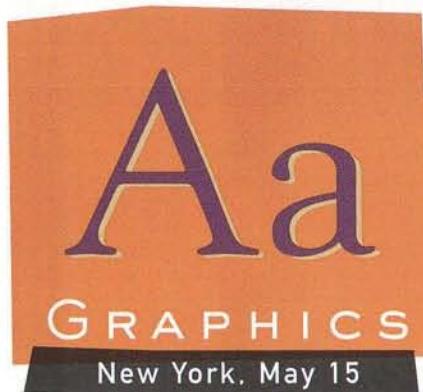
A N E X C L U S I V E
I N V I T A T I O N F O R

Macworld Active Buyers

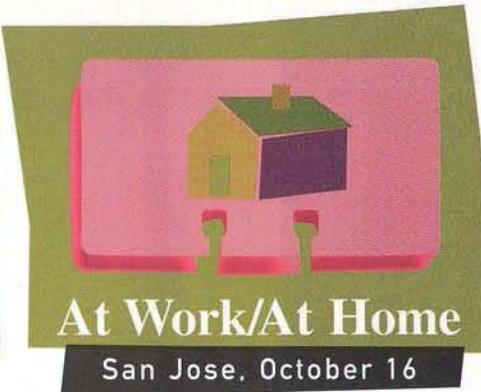
Come and meet top Macintosh
developers and resellers at Macworld
Active Buyer Days



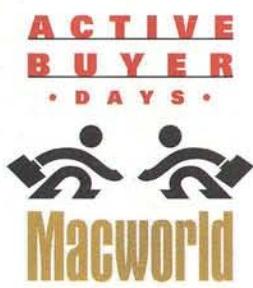
Los Angeles, March 13



New York, May 15



San Jose, October 16



Macworld cordially invites you to attend the Active Buyer Days in 1996!

Active Buyer Days are regional topic-specific, half-day events that allow Macworld readers the exclusive opportunity to interact with top Macintosh developers and resellers, see private demos, take advantage of special event discounts and participate in the Active Buyer Sweepstakes where thousands of dollars of Macintosh hardware and software will be given away!

Each event is **entirely complimentary** and includes lunch and an afternoon reception.

Register today...attendance is limited and exclusively for Macworld readers. A Macworld representative will contact you with additional information.

Yes! I'm a Macworld Active Buyer

name _____

Interested in attending:

title _____

Multimedia
Los Angeles, March 13

company _____

GRAPHICS
New York, May 15

address _____

At Work/At Home
San Jose, October 16

city _____ state _____ zip _____

phone _____ fax _____

number of Macintosh computers for which I have purchase involvement: _____

MAIL TO: Macworld Active Buyer Days, 501 Second Street, San Francisco, CA 94107

FAX TO: 415.442.0766 / E-MAIL TO: anna_noetzel@macworld.com

Quick Tips

Tips, Tricks, and Shortcuts

by Lon Poole

Although version 2.6 of America Online (AOL) for Macintosh doesn't have access to the Web-page tutorial that AOL for Windows offers (as noted in *Letters, Macworld*, January 1996), Macintosh users can

nevertheless publish Web pages on the Internet through AOL. First compose your Web pages in HTML format with a word processor or an HTML-editing program (such as Adobe PageMill), says Samuel Reichberg of New York (see "Build Your Own Home Page," November 1995). If you use a word processor, be sure to save each Web page as a plain text file. Next, test each page by opening it with the Open command in AOL's Web Browser while AOL is not connected. Then connect to AOL and upload the HTML files and supporting files (GIF files, AIFF sound files, and so forth) to your personal space on AOL's Web and FTP server. When you upload, specify text format for the HTML files and binary format for the supporting graphics and sound files. You have 2MB of space available for each of the five screen names your AOL account allows you.

To access your personal space, Bob Coon of Indianapolis suggests you type the keyword **My Place** and in the resulting window click the Go to My Place icon. You'll see AOL's FTP window displaying the contents of your personal space, much as the contents of a Mac disk appear in a Save dialog box. You upload files to your personal space by clicking the Upload icon at the bottom of the FTP window. (FTP stands for File Transfer Protocol, and you can think of it as the Internet's functional equivalent of a minimalist Finder.) There are other icons for managing your personal space—for renaming

and deleting files and creating directories, which are equivalent to folders. Uppercase and lowercase letters are not interchangeable in file and directory names on the Internet, cautions Steve Seaquist of Landover, Maryland. For simplicity, name your files and directories with lowercase letters.

The URL for a Web page in your personal space is <http://members.aol.com/screenname/filename>. In that URL, replace *screenname* with your actual AOL screen name in lowercase letters with all spaces removed, and *filename* with the name of



the file. If you name your home page *index.html*, most Web browsers can link to it with the relatively simple URL <http://members.aol.com/screenname>.

LocalTalk Joins Ethernet

Q My Power Mac 7500 has a LocalTalk connection through the printer port to a LaserWriter Select 360, and an EtherTalk network connection through the Power Mac's built-in 10BaseT Ether-

net port. When I select EtherTalk in the Network control panel, I can no longer access the LocalTalk LaserWriter. How can I get my Mac to access EtherTalk and LocalTalk simultaneously?

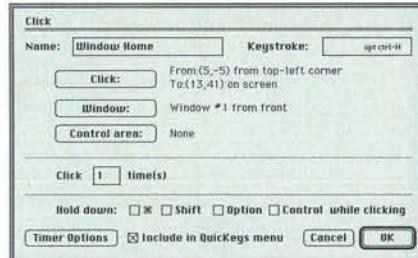
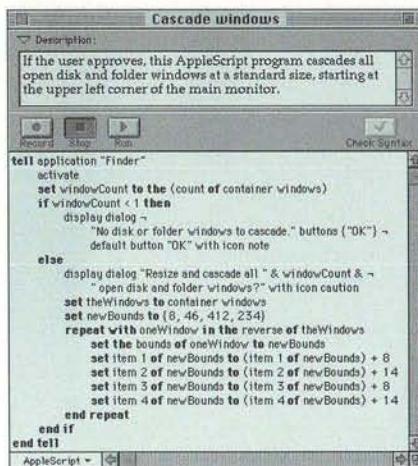
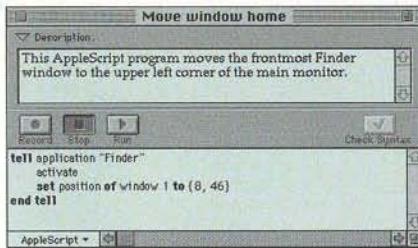
ROBERT FORSTOT
Saint Louis, Missouri

A Apple's free LaserWriter Bridge 2.0 software may be just what you need. It allows you to have a primary network connection to Ethernet simultaneously with a secondary network connection to LocalTalk. After installing LaserWriter Bridge, set your primary network connection by selecting EtherTalk in the Network control panel. Then establish a secondary network connection by turning on the LaserWriter Bridge control panel. The software comes on the System 7.5 Update CD (800/769-2775, ext. 5794), and you can get it online as part of Network Software Installer 1.5.1 (AOL keyword, *applecomputer*; Web page, http://www.support.apple.com/wwwdocs/apple_sw_updates.html).

An Ethernet network can include any number of Macs with active LaserWriter Bridge software, but each Mac must be connected to a different LocalTalk network. In other words, each LocalTalk segment can have only one Mac with active LaserWriter Bridge software.

You control whether LaserWriter Bridge allows other Macs on the Ethernet network to access all printers connected to your LocalTalk network. LaserWriter Bridge can theoretically handle 32 printers, but to ensure adequate network performance, Apple recommends 8 or fewer. If you prefer, you can designate your LaserWriter Bridge as private.

continues



Window Movers These two AppleScript programs (top and middle) and the QuicKeys shortcut (bottom) rearrange Finder windows. Make sure to save your script with the Kind option set to Application and the Never Show Startup Screen option turned on. For easy access you can put them in the Automated Tasks folder inside the Apple Menu Items folder. If you use Speech Recognition, put an alias of each script application in the Speakable Items folder. To create the QuicKeys shortcut, you define a Click shortcut whose Window option is set for the first window from the front and whose Click options are to click at coordinates $x = 5$, $y = -5$ relative to the top left corner of the window and drag the window to coordinates $x = 13$, $y = 41$ relative to the screen.

Other Macs on the same LocalTalk network segment as the LaserWriter Bridge can access only devices on that LocalTalk segment. If they need access to printers, file servers, or other network services on the Ethernet network (including printers connected through LocalTalk Bridge software to the Ethernet network), you can install Apple's \$100 LocalTalk

Bridge software where it establishes a two-way bridge between LocalTalk and Ethernet networks.

LaserWriter Bridge and LocalTalk Bridge also work with Token Ring as the primary network instead of Ethernet.

The Science of Window Arranging

I often copy a folder from a computer with a large screen area to another computer on the network with a small screen area. If the folder's window was positioned in the lower-right corner of the large screen, I sometimes can't see any part of the window when I open the folder on the small screen. I can't resize the window or work with its contents. The same problem occurs when I open some DOS disks that were last opened on a computer with a large screen. How can I force a folder or disk window to a viewable place?

DAVID M P
via the Internet

The symptoms you describe surprise me because the Finder should position a window so that at least a part of its title bar is visible. It's then a simple matter to drag the window until you can see its zoom (grow) box, and resize the window to fit the screen. But even that chore becomes tedious if you have to do it repeatedly. You can use the Script Editor application that comes with System 7.5 to create a simple AppleScript program that moves the frontmost Finder window to the upper-left corner of the screen, or a somewhat more complicated script that makes all open disk and folder windows a standard size and cascades them from top to bottom. If you don't have System 7.5, which is the earliest version with AppleScript and a scriptable Finder, you can use a utility such as QuicKeys to create a macro that moves the frontmost window to the top left corner. "Window Movers" shows the two scripts and a QuicKeys macro, which are available from the Macworld Online software library.

An Accidental Easter Egg

The text in my Labels menu has been replaced mysteriously with the seven letters *alanjef* (obviously two names), with *continues*

Get the new FreeHand Graphics Studio, featuring Macromedia xRes™ 2.0.

Macromedia's FreeHand Graphics Studio gives you everything you need for graphic design and illustration, including FreeHand™, Extreme 3D™, Fontographer™, and new Macromedia xRes 2.0. \$699.*

Try new Macromedia xRes 2.0 for \$199.**

Save \$500 off our \$699 SRP. Just \$199 for Photoshop, Live Picture, and Fractal Design Painter users. Current xRes users please call 1-800-457-1774 for special pricing.

Upgrade To FreeHand 5.5 For Macintosh As Little As \$79.**

Only \$79 to upgrade from FreeHand 5.0 to FreeHand 5.5. \$149 to upgrade from FreeHand 4.0 or an earlier version, or from Mac versions of Deneba Canvas, Claris MacDraw and Adobe Illustrator. FreeHand 5.5 Suggested Retail Price: \$599



Enter to win a trip for two to Universal Studios Hollywood!

Experience movie making magic on the sets of some of the greatest films of all time! Includes round-trip air travel and 4 days/3 nights at the Sheraton Universal Hotel. See below for details.†



1-800-248-0800

MacWAREHOUSE®

1-800-255-6227



1-800-222-2808

PCs & Mac Connection

1-800-800-1111

*Proof of ownership required. **Estimated street price. Reseller prices may vary. Macromedia reserves the right to substitute products in the Studio at any time. Freehand Graphics Studio will be available for Macintosh in February. Windows version will be available in March and includes coupon for Macromedia xRes 2.0 for Windows shipping Spring '96. No purchase necessary. You are automatically entered when you register your Macromedia software purchased between 1/1/96 and 3/31/96. Open to legal residents of the U.S. and Canada, 18 years or older. All entries and registration must be received by April 10, 1996. Approximate prize value \$3,000 plus 4 first prizes of Macromedia software valued at \$900. For official rules and entry form, contact Macromedia at 1-800-326-2128. (Michigan residents only may send stamped, self-addressed envelope to Macromedia Rules, P.O. Box 18829, Irvine, CA 92713-8829.) Void in Quebec and where prohibited. Drawing will be held on or about 5/15/96. Odds depend on number of entries. Universal Studios Hollywood logo © 1995 Universal City Studios, Inc. Fontographer is a registered trademark and Freehand, Extreme 3D, Freehand Graphics Studio, and Macromedia xRes are trademarks of Macromedia, Inc. © 1996 Macromedia, Inc. All rights reserved.

New Studio, Fully Furnished. Designer's Dream. \$699.

FREEHAND



EXTREME 3D



FONTOPHOTOGRAPHER



AUTHORWARE



DIRECTOR



SAOUNDEDIT 16

Introducing the FreeHand Graphics Studio.™

This is the place. Everything you need to create virtually anything you can imagine. The most powerful set of tools for graphic arts and design. All working together brilliantly to make creation easier.

Four amazing 2D and 3D products for one low price. FreeHand,™ the fastest and easiest illustration tool on the market. Extreme 3D,™ the complete 3D animation and rendering application. Fontographer,

the easiest way to create and modify fonts. And featuring the all-new Macromedia xRes™ 2.0, the fastest editing, compositing and painting tool for hi-res images. At \$699** for the entire package, it's a price you can live with.

Imagine. A killer font you just designed, an incredible new 3D image, and a hi-res bitmap you created—all ready to be brought into FreeHand and incorporated into illustrations and page layouts.

It's time to take your designs to a higher level. So make the move to the FreeHand Graphics Studio. Just call Macromedia for the name of a reseller near you, or tour any Studio on our Web site.

Some people search a lifetime for a Studio like this. You can move in today.



<http://www.macromedia.com/>

MACROMEDIA®

Tools To Power Your Ideas™

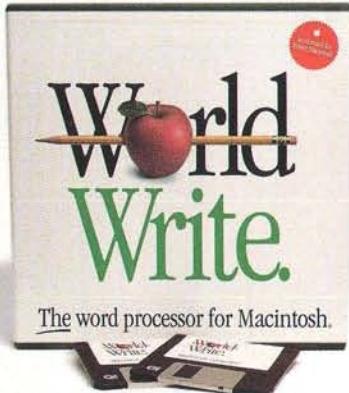
Circle 244 on reader service card

This ad and all artwork was created with FreeHand and the FreeHand Graphics Studio.

*Offers valid in the U.S. and Canada only. Outside the U.S., Canada, and Europe, call 1-415-252-2000 or FAX us at 1-415-626-0554. In Europe, call +44-1344-761111. **Estimated street price. Reseller prices may vary. Macromedia reserves the right to substitute products in the Studios at any time. Macromedia, Fontographer, and the Macromedia logo are registered trademarks and FreeHand, Extreme 3D, Macromedia xRes, Tools To Power Your Ideas, and FreeHand Graphics Studio are trademarks of Macromedia, Inc. All other brand or product names are the property of their respective owners. © 1996 Macromedia, Inc. All rights reserved.

New Word Processing Powerhouse!

(No hardware upgrade required)



Power Mac
Full Install: 3.5MB
RAM requirements: 2MB

WorldWrite 3.0

Finally, there is a powerful word processor written exclusively for the Macintosh that won't require a hardware upgrade. While the big companies are pushing bigger and bigger applications requiring a heavy price in hardware and patience, WorldSoft has designed a small and elegant Macintosh word processor that still gives you the powerful features you want.

- Power Mac native
- Intelligent Tables
- text-to-speech
- stylesheets
- file management
- copy append clipboard
- irregular text wrap
- footnotes & endnotes
- 100% WYSIWYG editing
- master pages
- voice annotation
- System 7.5 savvy
- color separation
- page layout
- Thunder 7 spell checker
- search unopened text

The WorldScript-savvy version also offers complete multilingual capabilities including right-to-left languages and vertical input of Asian two-byte languages.

90-day money-back guarantee

\$99 Introductory Offer

Order from



1-800-222-2808

Priority Code MWJ59



14234 Saratoga-Sunnyvale Rd.
Suite #1
Saratoga, CA 95050
1-800-225-9299

Circle 145 on reader service card

one letter next to each label color. Also, sometimes the Finder's Page Setup and Print Desktop commands are dimmed. What's going on?

DAVID KATZ

Edmonton, Alberta, Canada

A The Labels menu change is an Easter egg that appears when you delete all the text in the Labels control panel. To get rid of it, enter some text for each label and restart (the original labels are Essential, Hot, In Progress, Cool, Personal, Project 1, and Project 2). You can get instructions for uncovering lots of Easter eggs in "Apple Easter Eggs," compiled by Daniel Fanton and available through Macworld Online on the Internet (<http://www.macworld.com>) and on AOL (keyword *macworld*).

The Finder's Page Setup and Print Desktop commands are disabled when certain windows, such as About this Macintosh, the Clipboard, the Launcher, (or another control panel) are active. Click any icon or the desktop to enable those commands.

Server Log-in Shortcuts

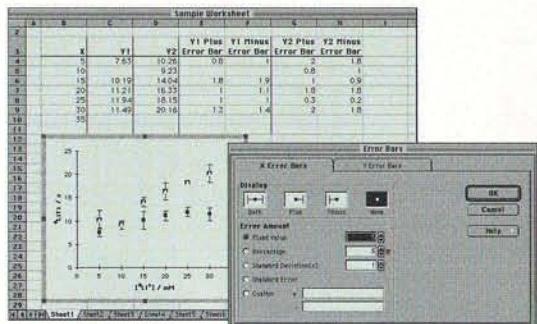
TIP When logging on to an AppleShare server or a System 7 file-sharing server through the Chooser, you can press **⌘-R** for Registered User or **⌘-G** for Guest. Eliminating an extra trip to the mouse, this shortcut is especially nice for keyboard-oriented folks.

MARK ALTENBERG

Kensington, California

Instant Reprints (Well, Almost)

TIP Some documents take quite a while to spool for background printing, and that's on top of the time it takes to open the application and the document before you can begin printing. For example, I have Photoshop files that take several minutes to spool for printing on my Color StyleWriter. I like to share prints of those pictures with my friends, but to conserve ink I rarely print more than one or two copies at a time. I devised this procedure—using Apple's desktop printing software—for eliminating spooling delays.



Adding Error Bars In Excel 5.0's Error Bars dialog box you can add custom error bars to the data series currently selected in a chart. Near the top of that dialog box you select the direction in which you want error bars displayed—Plus, Minus, or Both. At the bottom of the dialog box you specify the amounts to use for each direction you selected (Plus, Minus, or Both). You can specify the error amounts for each direction as an array formula or as a range of cells; you can define a cell-range reference by typing it in or by dragging across the cells.

Before printing a file for the first time, select the desktop printer icon and choose Stop Print Queue from the Finder's Printing menu. Then print the file, causing a spool file (which the Finder calls a Desktop PrintMonitor document) to be created for the desktop printer. If you forget to stop the print queue before printing, immediately go to the Finder and stop the print queue or open the desktop printer icon and put the print request on hold. Next open the desktop printer icon and drag the spool file to any folder. When you're ready to make a print, hold down the option key and drag the spool file from that folder to the desktop printer icon. This makes a copy of the spool file for the desktop printer and leaves the original spool file untouched for future reprints. If necessary, use the Finder's Start Print Queue command to start up background printing. *Et voilà!* Reprints without spooling or opening a document and its application!

KOMRA MORIKO

Prescott Valley, Arizona

You can get the desktop printing software from Apple's online sites (listed above in "LocalTalk Joins Ethernet") as part of the LaserWriter 8.3 package or the Color StyleWriter 2400 package. The desktop printing software works with most Apple printer drivers, such as the StyleWriter II, StyleWriter 1200, LaserWriter 300, LaserWriter Select 310, and earlier versions of LaserWriter.—L.P.

The Truth about Suffix Removal

By itself Aladdin's free StuffIt Expander software can decompress or decode only four types of files—those whose names end with .sit, .cpt, .hqx, or .bin—not the long list of file types listed in January's *Quick Tips*. Doug Reider, of Roaring Spring, Pennsylvania, and other readers correctly state that you need to add Aladdin's \$30 shareware DropStuff with Expander Enhancer to handle the rest of the listed file types—those whose names end with .zip, .zrc, .pkg, .gz, .z, or .uu. Both DropStuff and StuffIt Expander are included with StuffIt Deluxe, but neither one comes with StuffIt Lite.

Easy Error Bars

It turns out there's an easier method than the one presented in January's *Quick Tips* for adding different error bars to individual data points in an Excel 5.0 chart. According to Sally Swidine of Seattle, and other readers, you should lay out the data to be graphed in the usual manner, with the *x*-axis data in one worksheet column and the *y*-axis data in the adjoining columns. Use additional columns for the amounts that specify the lengths of the custom error bars. Create the chart, and then select one data series by clicking a data point on the chart (if the chart is not already selected for editing, click it and then click the data point). Choose Error Bars from the Insert menu to bring up the Error Bars dialog box and in it enter the cell range that specifies the custom error-bar amounts for the selected data series, as shown in "Adding Error Bars." Close the dialog box and then use the Error Bars command again on each remaining data series. ■

We pay from \$25 to \$100 for tips published here. Send questions or tips on how to use Macs, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld*. Due to the high volume of mail received, we're unable to provide personal responses.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. He is the author of *Macworld System 7.5 Bible*, third edition (IDG Books Worldwide, 1994).

New MasterJuggler 1.91

Take Control of Your Fonts!

Throwing every font into the System folder slows down you and your Mac. You have to put up with long font menus, slow application launching, and a bloated System folder. Your Mac can only handle 128 font suitcases so if you have a large font library, you're also forced to quit all your open applications and drag fonts in and out of the System folder. Get a grip on your fonts. Restore speed, convenience and control with MasterJuggler!

MasterJuggler gives you access to your entire font library and you can store your fonts anywhere. You can even share fonts over a network. Font sets allow you to group fonts by client, job, project, or any other category. You can open and close fonts or sets of fonts as you need them without quitting all your open applications. Using just the fonts you need makes your font menus shorter and your applications start noticeably faster.

Font Experts Choose MasterJuggler

"[Since] the Mac doesn't provide such font management luxuries... I recommend MasterJuggler [over Symantec's Suitcase]; it's easier to use and has a much more up-to-date manual."

Jim Heid, *Macworld Magazine* 5/95

"You should definitely consider MasterJuggler (unless, of course, your little secret is that you like juggling all those fonts yourself)."

Tamis Nordling, *Adobe Magazine* 3/95

"We recommend MasterJuggler, which matches the venerable Suitcase feature for feature (and beyond) and is much easier to use."

Aileen Abernathy, *MacUser* 8/95

Reliability & Compatibility That's Unmatched

MasterJuggler is fully compatible with all major desktop publishing and graphics software. And MasterJuggler is the only font manager compatible with System 7.5, QuickDraw GX and all Power Macs including the new PCI Macs.

Grab a copy today and take control of your fonts!

©1996
Alsoft, Inc.
PO Box 927,
Spring, Texas
77383-9927 USA.
713-353-4090 or
fax 713-353-9868.
MasterJuggler is a
registered trademark
of Alsoft, Inc. Other
product names are trademarks
of their respective companies.



ALSOFT



800-257-6381

Circle 140 on reader service card

Nothing comes closer to reality.



**"SuperScan took top honors
in every important performance category"**

Macworld



In February, Macworld editors voted the SuperScan MC 21 their "runaway favorite for focus, brightness, contrast, and color." They also praised its "sensible, intuitive controls" and "reasonable price" — hallmarks of every SuperScan MC monitor.



Check them out today. Each is designed specifically for Power Macintosh. So you get the best performance you can buy.

For details, call NSA at 800 441-4832. Or use our faxback system at 800 555-8552.

	NEW SuperScan MC 21HR	SuperScan MC 21	SuperScan MC 20	SuperScan MC 17	NEW SuperScan MC 17s
Viewable Image Size	20"	20"	18.7"	15.9"	15.7"
Maximum Resolution	1600 x 1200		1600 x 1200	1360 x 1024	1280 x 1024
Scan Frequency	31-95 KHz 50-160 Hz	31-85 KHz 50-160 Hz	30-82 KHz 50-120 Hz	24.8-82 KHz 50-120 Hz	30-64 KHz 47-104 Hz



RASTEROPS®



MPR II

3-year
warranty

Macintosh
plug & play

Colorific

SuperScan®
An advantage you can clearly see.

100 Lowder Brook Drive **NSA**
Westwood, MA 02090

HITACHI

Circle 74 on reader service card

Parcel Post—Internet-Style

by Cameron Crotty

The season to be jolly may be long past, but few bad memories linger like holiday postal memories. Finding just the right gift for Aunt Gladys was

nothing compared with the hours spent wrapping it in bubble-wrap, nesting it in multiple boxes, and dumping in cups of packing popcorn, all so that the glass tchotchke you bought would arrive whole and not in shards.

Sending files by E-mail is faster than relying on snail mail, but your electronic messages can receive treatment every bit as rough as the caresses of the mail-delivery services. And if you don't package your files properly, they might arrive in tiny, mangled pieces.

So what happens to files sent via Internet E-mail, and how can you protect yours?

Why Encode?

To send Aunt Gladys's memento, you need enough padding to survive the crushing blows delivered by conveyor belts and other parcels. On the Internet, the crushing blows come from Internet mail servers, all of which process only text messages, and some of which deal harshly with over-long messages.

This isn't a problem if you're sending unformatted text files, but those mail serv-

ers make a quick hash of any other type of file. Known collectively as *binary* files, these include image files, sound files, applications, QuickTime movies, and formatted text documents. In order for binary files to survive, they must be *encoded* as ASCII text.

Feeding a binary file through an encoding program produces a text file that looks like a monkey has been slapping your keyboard, but contains all the information in the original file. You can attach the text file to an E-mail message, or you can copy the encoded

recommend purchasing StuffIt Deluxe from Aladdin Systems (408/761-6200, info@aladdinsys.com; \$129.95). Not only is the StuffIt compression protocol one of the most popular in the Mac community, but it handles just about any compression and encoding protocol you will find on the Net, including most of the weird Unix and PC-compatible stuff.

How to Encode and Send

There are three main ways to encode binary files for the Internet: BinHex, UUCode,



text and paste it directly into your E-mail. Since the file is now unformatted ASCII text, you can send it through any mail server, and once the file arrives, the recipient can use software to *decode* the text, reconstructing the original file.

There are a number of quality shareware tools for encoding and decoding binary files, and I'll talk about them as I describe specific protocols. But if you spend a lot of time sending and receiving files over the Internet, I highly

and MIME. Of these, UUCode is the oldest and MIME has the most future promise, but BinHex is a protocol that every Mac Net surfer should know.

BinHex If the Macintosh hadn't come along, we'd probably all still be sending each other UUCode (uuencoded) files. But the Mac OS has a two-pronged file structure—that is, every Mac file has a data fork and a resource fork. Generally, uuencoding isn't a problem when transferring data

files such as sounds or images. But uuencoding completely ignores a file's resource fork.

Enter BinHex, an encoding scheme that preserves the Mac's dual-fork file structure. BinHex is the most popular encoding method used on Internet Macintosh archives—you can generally recognize a BinHex file by its suffix, .hqx. Most Internet archives are Unix-based, and an encoded file can be simply stored as a text file, regardless of the operating system it originated on.

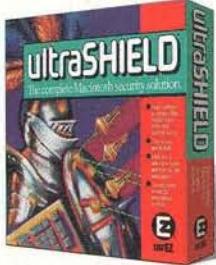
While StuffIt Deluxe is my commercial recommendation, for shareware stalwarts who need to decode BinHex files I recommend StuffIt Expander; Compact Pro from Cyclos and HQXer are also solid utilities for encoding and decoding BinHex files. Note: Do not use BinHex 5.0—it is not simply an upgrade of BinHex but uses a different encoding algorithm, making your files unreadable by other BinHex-decoding software, and it is unreliable.

UUCode UUCode was originally developed for Unix users to trade binary files using ASCII transport mechanisms. It's still in use in Usenet newsgroups, where you can download uuencoded image and sound files. You'll recognize such files from their suffix, .uu. Jeff Strobel's shareware UULite is a top-flight utility.

For a protocol, UUCode is pretty rude—it generally ignores

continues

Real World...



Real Solutions...



Real Rewards...

Magazines have heralded our security, ease-of-use, speed and compatibility. Users, the most sophisticated and demanding reviewers of all, have just voted us the #1, "Best Macintosh Security Product," *Infosecurity News* competition winner.

Similarly we vote you, the Macintosh user, #1 and thank you for helping us continuously refine and expand our products.

For those who haven't yet joined our team, we welcome you and your input to our family of improving products.

Try us and see for yourself why thousands of people around the world continue to vote usrEZ #1. Demand usrEZ products at your local or national reseller. Or call your security partners at:

800-482-4622 or 714-756-5140



The Continuing Excellence Corporation.

© 1995 usrEZ Software, Inc. usrEZ and ultraSHIELD are trademarks of usrEZ Software, Inc.
All brand names are trademarks or registered trademarks of their respective holders.

nores file types and headers—but it has widespread acceptance on the Net (mostly by the Unix crowd). Just remember: UUCode does not recognize the Mac's dual-fork file structure.

MIME MIME stands for Multipurpose Internet Mail Extensions, and it's a different approach. MIME is an attempt to build a standard to encode and transmit, then identify and decode, non-ASCII data. MIME messages are encoded text, but they also contain detailed information so that, ideally, your recipient's E-mail program can read the message, identify and decode the encoded parts, and display the entire thing. For example, you could use multiple font sizes, bold, italics, some in-line graphics, and a sound clip.

Unfortunately, not many E-mail programs specifically support MIME; three that do are Eudora Pro from Qualcomm (619/587-1121, *quest-rep@qualcomm.com*; \$89), the E-mail client in InterCon's TCP/Connect II (703/709-5500, *sales@intercon.com*; dial-up-only version \$195), and Claris Emailer (408/727-8227; \$89). If you want to try manually sending MIME messages, Mpack (Macintosh version by Chris Newman) encodes and decodes MIME parts for you, and can also decode

BinHex and uuencoded files.

Online Services If both you and Aunt Gladys subscribe to the same online service, then you're in luck. America Online, CompuServe, and Prodigy all support sending binary enclosures to other service members. You will still want to compress your attachments to reduce transfer times, but don't bother encoding anything.

America Online lets you send attached files over the Internet, and if you receive a file attachment that's been uuencoded, BinHexed, or compressed with StuffIt or Compact Pro, AOL's software automatically unpacks it. CompuServe and Prodigy do not allow members to send or receive attached files from the Internet. If you want to send a file, you have to encode it, and then paste the encoded text into the body of an E-mail message.

Why Compress?

It's generally a good idea to compress files before you encode them, for the simple reason that transferring smaller files saves time and dollars. Compression is especially important when sending files over the Internet, as encoding a file usually increases its size. Also, compressing a file gives you the

Web Worthy

Access the MIME FAQ at <http://www.cis.ohio-state.edu/text/faq/usenet/mail/mime-faq/top.html> for more information.

Likewise, the FAQ for <http://www.cis.ohio-state.edu/hypertext/faq/usenet/macintosh/comm-faq/top.html> is loaded with lots of useful telecommunications information.

The WWW Viewer Test Page site, <http://www-dse.llnl.gov/documents/WWWtest.html>, offers several document types so you can confirm that your file viewers are properly installed. One test lets you send an E-mail message with MIME attachments.

And for more info on BinHex, visit <http://www.natural-innovations.com/boo/binhex.html>.

Shareware PICKS

This month's crop of Mac shareware tools will help you encode, compress, and send files via E-mail across the Internet.

Standing head and shoulders above other decoding and decompression utilities, Aladdin Systems' **StuffIt Expander** is fast, free, and can handle nearly anything except for MIME-encoded messages.

Those interested in more-focused utilities should try **HQXer**, a BinHex file encoder/decoder; **UUlite**, a shareware UUCode utility; or **Mpack**, a tool for encoding and decoding MIME messages.

Encoding a file may protect it from the E-mail gorillas, but compressing it will protect you from excessive connect charges. **Compact Pro**, from Cyclos, can compress and expand files, encode and decode using BinHex, and create self-extracting archives.

Once your file is packaged up, you can send it with **Eudora Light**, a freeware version of Qualcomm's Eudora Pro E-mail client.

You can find these applications in the Macworld Online Software Library on America Online or on our Web site (<http://www.macworld.com>). They are in the Mentioned in Macworld section.

opportunity to protect it with a password, providing you with some level of security. Keep in mind that adding a password to a compressed archive is like locking your car doors in a parking lot: it will keep out frivolous malefactors, but a determined thief will figure out how to bust a window and grab your stereo.

If you choose to compress a file, either make sure that your recipient has the appropriate decompression software or create a self-extracting archive. A self-extracting archive (often identified by the suffix .sea) builds the decompression software into the compressed archive, so the file will automatically uncompress.

If the file is larger than 64K, an Internet mail server may *segment* your message and deliver it in two or more bite-size chunks. If you receive an encoded message in two chunks, simply use a text editor to paste the sections back together, and send the file through a decoder. If the file is corrupted in the

sending, you might want to ask whoever sent you the file to use an encoder to presegment the file and send it as multiple messages.

Getting your files from here to there over the Internet can be tricky, but with the proper tools and some experimentation, the JPEG file you E-mailed to Aunt Gladys might get there in better shape than that glass knickknack. ■

Associate editor CAMERON CROTTY (cameron@www.macworld.com) covers telecommunications issues and the Internet, and never gets tired of watching his E-mail in-box light up.

REACHING MACWORLD ONLINE

America Online: Keyword Macworld

World Wide Web:
<http://www.macworld.com>

Mailing list for Macworld Live's events calendar: Send an E-mail message with subscribe in the subject line to:
mwlive@macworld.com

MacAcademy®

Windows Academy™

2 Hour,
Award Winning
Training Videos
only \$49



**It
Takes
Serious
Training
To Get
To The Top**

Computer Training Videos

It takes more than motivation to get to the top. You need the proper tools and someone to guide you along the way. Right now, hundreds of thousands of people all over the world are using MacAcademy as their personal computer guide. Our promise to you is that you will learn these programs in half the time over conventional training methods. It's time to get serious.

Please see our ad in the mail order section
for a list of our videos

Full Money Back Guaranteed

Dept MW-0496 100 E Granada Blvd Ormond Beach FL 32176-1712
<http://www.macacademy.com>

800-527-1914 or 904-677-1918 Fax 904-677-6717

Circle 106 on reader service card



Image by Marcolina Design

Drive a High-Res, Full Page Photoshop Image. Real-Time, Anytime with Genesis MP.

You know the tracks are there even if they're covered under seven feet of snow. You know how to get the job done. You just need more time... or more power. **Power counts.**

Especially when you have to produce an image in time to make the last courier. **The less time spent waiting on Photoshop, the more time you have to be creative and still make it under the wire.**

The revolutionary Genesis MP is a powerful new Mac OS system using four of the fastest PowerPC 604 processors available. Now you can drive huge files in real-time rather than just pushing pixels.

Genesis MP runs Photoshop seven times faster than a PowerMac 8100. It's four times faster than



Apple's new PowerMac 9500. Even an SGI workstation costing three times as much runs at a fraction of the speed. **Nobody does it faster than Genesis MP.**

In addition to Adobe's Photoshop, After Effects and Premiere, and Strata's Studio Pro, **over 200 Mac software titles for publishing are being boosted to multiprocessing performance.** So, it's time to make tracks. Get a Genesis MP.

Look us up on the Web at <http://www.daystar.com> or call us at **800.895.2132** for some hard data on the new line of Genesis MP computers.

DAYSTAR®
DIGITAL

Genesis MP: A new beginning in Mac workstation performance.



Media

Sounding Good

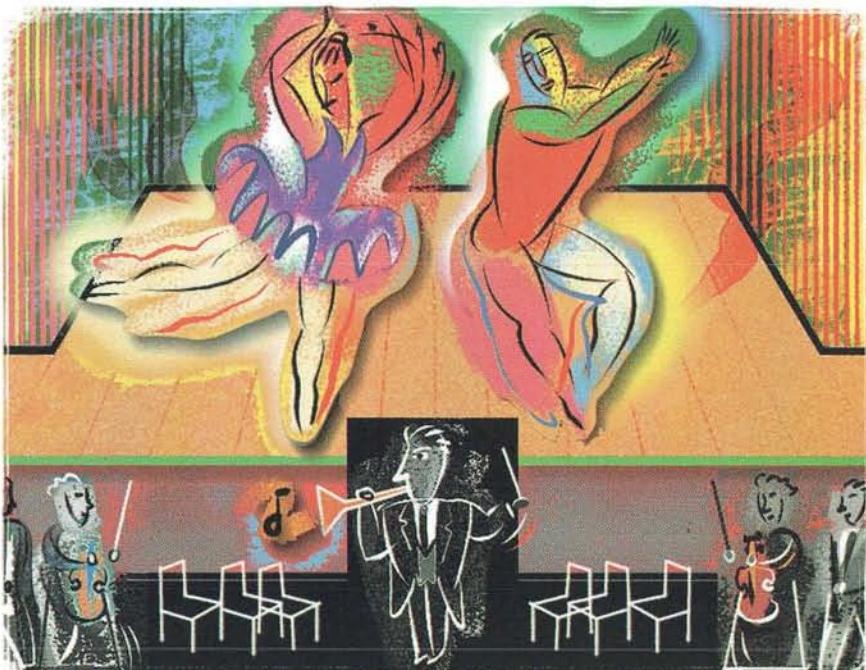
HOW TO MAKE SOUNDTRACKS SPARKLE

by Jim Heid

Which TV viewing experience would you prefer: a crystalline picture and staticky sound, or a snowy picture and high fidelity? Concertgoers—would you rather have an unobstructed view and muddy sound, or a tall hat in front of you and plenty of volume? As priceless as both senses are, we choose sound over sight when the sound conveys information.

So why is so much multimedia audio so lousy? One reason: QuickTime movie producers rarely have the luxury of delivering sound at CD-quality specs—a 44kHz sampling rate with 16 bits of resolution. Audio that rich has fairly high data-rate requirements, and accommodating it in a CD-ROM-based movie would reduce image quality. (See last month's *Media* column for an introduction to data-rate issues.) Also, some Macs and many Windows machines can't play back 44kHz, 16-bit sound. Disk space is another issue: CD-quality stereo sound uses 10MB per minute.

The World Wide Web is even more limiting. You can post 44kHz, 16-bit sounds on a Web site, but your listeners will need ISDN lines or better, lest downloads take forever. Audio-streaming technologies, like Progressive Networks' RealAudio, eliminate lengthy downloads, but compress and downsample audio to low-fidelity levels.



Let's look at what you can do during recording, editing, processing, and down-sampling to minimize this quality loss. (To hear examples, visit <http://www.mcn.org/heidsite/>.)

Record: Strive for the Highest Quality

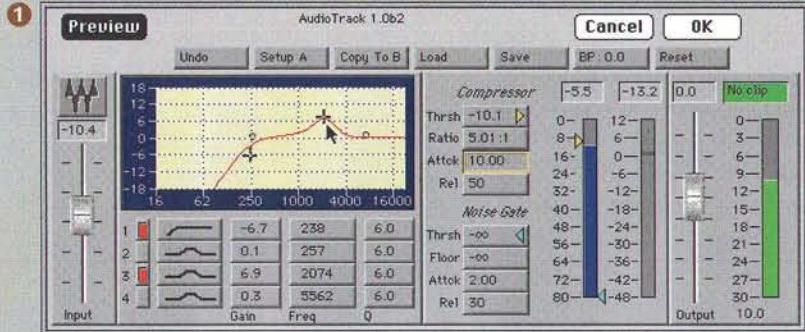
- Use the best microphone you can afford. Shure Brothers, Audio Technica, and AKG have excellent offerings for less than \$150 (sold through audio and music dealers). Even a \$39 public-address mike

from Radio Shack is better than the mike that comes with your Mac. A tie-clip mike works well for voice recording.

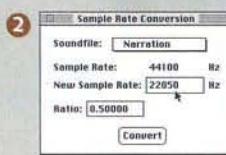
- For video work, use an external mike instead of the camcorder's built-in mike, which will pick up room noise.

- Use multiple mikes for multiple subjects. When videotaping a roundtable or a music group, dedicate a mike to each participant. Use a mixer (the \$429 Mackie Designs [206/487-4333] Microseries 1202-VLZ is hard to beat) to adjust volume levels and combine the signals into

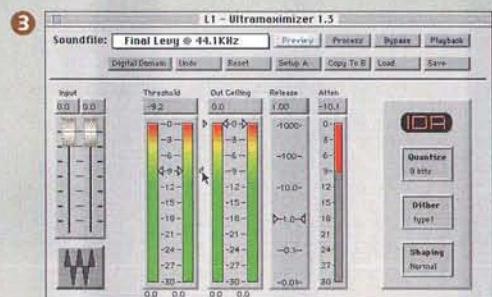
Steps to Better Soundtracks



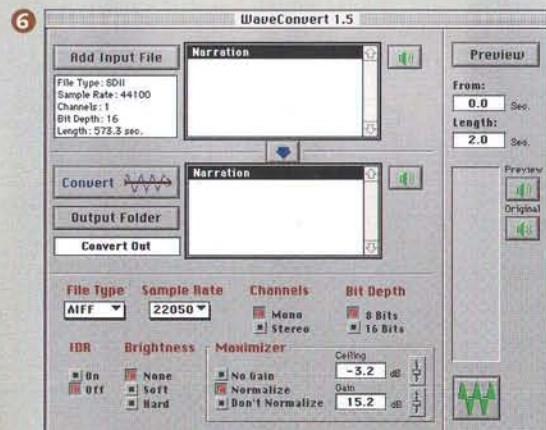
To optimize 44kHz, 16-bit audio for low-bandwidth delivery, begin by applying equalization, as shown here in Waves' AudioTrack. Cutting low frequencies removes undesirable background rumble, while boosting midrange frequencies adds some punch on low-end speakers.



After equalization, downsample the 44kHz file to the desired sampling rate (see the sidebar "A Field Guide to Formats") as shown here in Digidesign's Sound Designer II (top) and Adobe Premiere 4.2 (bottom).



optionally reduces its bit depth from 16 to 8. Always apply L1 as the final step in an audio processing job. (4) Before L1 processing. (5) After L1 processing: note the overall increase in loudness.



Waves' WaveConvert utility packs downsampling, format conversion, and level optimization features into one dialog box. It's an ideal alternative to costlier utilities such as L1.

one track (for mono recording) or two (for stereo).

• Position mikes properly. If you're recording to the Mac's hard drive (rather than to a video recorder, for example), move the mike away from the hard drive and fan, which are noisy. Record in an acoustically *dry* room (one without echoes). To test a room's dryness, clap once and listen; if that clap reverberates, spread carpets and hang drapes on the walls to deaden echoes.

• Set the levels of recording software properly. Adjust the levels so that the on-screen volume meter reaches the upper end of its range during loud passages. To avoid distortion, however, make sure the meter's clipping indicator doesn't illuminate during loud peaks.

• Record at 44kHz, 16-bit, with no compression, using a Power Mac or 680X0 AV Mac. See "The Mac Recording Studio," *Macworld*, December 1995, and "Multimedia Secrets," August 1995, for details on audio settings and products.

Edit: Refine Your Material

• Delete awkward pauses and flubbed words in recorded narration or interviews. Do a cutaway to a different subject at edit points. Or do a brief cross-dissolve at the edit point; this prevents a jarring cut in which the speaker jumps from one position to another.

• To edit using Adobe Premiere or Avid VideoShop, use a sound-editing program—these mainstream video-editing packages don't have waveform-editing features. Macromedia's SoundEdit 16 works well; Digidesign's Sound Designer II is better still but requires a dedicated NuBus card. Macromedia's (formerly OSC's) Deck II works, too, but it's better suited to multitrack recording than to waveform editing. Regardless of the audio editor, you must go through an export/import routine to edit the soundtrack (see the screen shots "Editing Sound").

Process and Downsample: Finishing Up

• Perform edits at the 44kHz, 16-bit level. Unless the final product is for videotape or broadcast, you will eventually downsample the audio to a lower sampling rate and perhaps to 8-bit resolution. (If you do this with a video-editing package or a program such as SoundEdit 16, you'll get soundtracks containing an annoying hiss.)

Optimizing sound quality while downsample and converting bit depths

requires you to perform a variety of steps in a specific order (see the sidebar "Steps to Better Soundtracks"). It also requires additional software, the best of which comes from Waves (423/588-9307, waves@waves.com; note that Waves' products require a \$100 hardware dongle). The L1-Ultramaximizer (\$600 or \$800) boosts a soundtrack's volume and shapes its waveform to provide the best sound quality with the least amount of noise—the results are amazing.

The full bundle of Waves utilities sells for \$1650 to \$2300. The utilities work best as plug-ins for Digidesign Audiomedia II cards or Pro Tools III systems, but they also run on Power Macs with no additional hardware. Still, they may be overkill or at least overbudget for most multimedia producers. Great news: Waves has released two products that provide the most essential processing functions and don't require a dedicated audio card when used on a Power Mac. AudioTrack (\$300) provides equalization, compression, noise gating, and more; it works with Digidesign hardware as well as Adobe Premiere and programs that use the Premiere plug-in format.

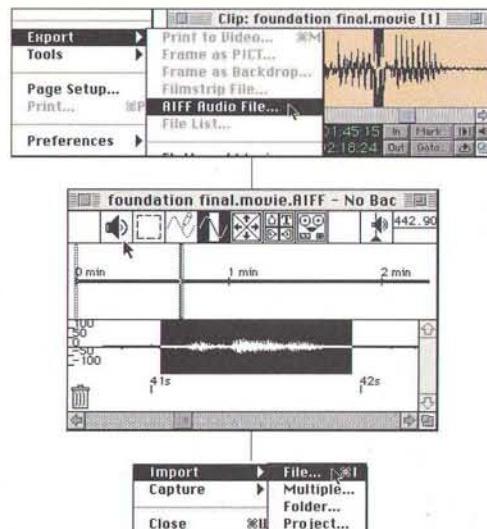
For downsampling, bit-depth conversion, and the level-maximizing marvels of Waves' L1-Ultramaximizer, get WaveConvert (\$300), which also lets you batch-convert audio files. Because it is a stand-alone program (not a plug-in), you must endure the export/import routine

Editing a QuickTime movie soundtrack in an audio program requires an export/import routine, like the one shown here in Adobe Premiere 4.2.

Top: In the Construction window, double-click on the movie clip's soundtrack to display its waveform (behind the menu). Then, choose AIFF Audio File from the File menu's Export submenu.

Middle: Import the AIFF file into an audio program and edit.

Bottom: Import the file back into Premiere and synchronize it with the video track.



described in "Editing Sound" to apply WaveConvert's talents to movie soundtracks. The results are worth the effort. (Version 2.0 of Macromedia's SoundEdit 16 provides improved downsampling features as well as a plug-in architecture that Waves has announced it will support.)

Sound Advice

Indeed, all the effort you put into optimizing audio pays off. CD-ROM consumers or Web surfers may forgive slow movie frame rates or low-resolution

graphics, but they'll remember the headache that bad sound gave them. You'd probably rather be remembered for something else. ■

Next month: Optimizing graphics for CD-ROMs and the Web.

Contributing editor JIM HEID's interactive CD-ROM accompanies his *Macworld New Complete Mac Handbook*, fourth edition (IDG Books Worldwide, 1995). He also produces audio segments for Radio Macworld (<http://www.macworld.com/tccafe>).

A Field Guide to Formats

Here are some of the formats you'll need to know when producing audio files for CD-ROMs or Web sites.

CD-ROM

Sampling Rate For music, 22.05kHz (exactly half the CD-quality 44.1kHz rate) delivers reasonable fidelity. For voice, 11.025kHz may be acceptable.

Bit Depth You get cleaner sound with 16-bit audio but 8-bit takes only half the space. Also, you should license Apple's Sound Manager 3.1, which is Power Mac native, for your title—versions before 3.0 don't support 16-bit sound.

Compression Sound Manager 3.1 and QuickTime 2.1 (not QuickTime for Windows, yet) support the Interactive Multimedia Association's IMA 4:1 compression scheme. IMA audio sounds good, but it may play poorly on slower Macs.

THE WEB

File Format By using QuickTime 2.1 with Apple's Movie Player 2.1 or Macromedia's SoundEdit 16 2.0, you can create the popular AU, or Sun audio, format files. Many sites encode AU audio as 8kHz, 16-bit files using the µLaw compression scheme. Movie Player

2.1 can export µLaw-format audio, although you must manually enter sampling rates lower than 11.025kHz in the Sound Export Options dialog box's Rate text box.

Audio utilities and QuickTime movie editors can also export and import Audio Interchange File Format (AIFF) files.

To play AU or AIFF files immediately after downloading them, a Web browser needs to launch an audio-helper application such as Norman Franke's freeware SoundApp.

Hearing audio while a file downloads requires a streaming technology such as Pro-

gressive Networks' RealAudio (<http://www.realaudio.com>). RealAudio 2.0 uses a higher sampling rate and provides significantly better quality than the previous version, but you need a 28.8-Kbps or faster connection.

New streaming technologies that rely on MPEG compression include StreamWorks from Xing Technology (<http://www.xingtech.com>) and MPEG/CDE from Kauai Media (<http://www.electricity.com/kauai>).

Tip: Provide audio files in a compact, low-fidelity form and in a larger, high-fidelity form, and let Web site visitors choose.

Publishing Workshop

Cropping and Clipping

by David Blatner

Maybe you want to get rid of your ex-spouse. Or perhaps it's the background behind a gift that has to go. No, I'm not using *get rid of* in the mobster

sense—I mean "remove from a photograph." In the real world, if you don't like something in a picture, you take out a pair of scissors and trim it off. In the electronic world, cropping and clipping is a little more complex. In this article I focus on cropping bit-mapped images.

Printing a cropped image can take 20 minutes or 2 minutes depending on what file format you use to save the file. In real life, each photograph or negative takes about the same amount of space. But in the electronic ether, every image bit takes up space on your hard drive, in RAM, and—when you print—in traffic over the network.

Cropping the Image Data

If you crop an image in Adobe Photoshop (or in a similar image-editing program) and then save the file with exactly the same name, the program throws away the cropped pixels—you can't go back and retrieve that image data (see "Cropping in Photoshop"). Because the new image contains fewer pixels, it takes up less space on your hard drive

To rotate and crop at the same time, hold down the option key when you drag. Move the cropping rectangle by holding down the Alt key and dragging a corner.

When you're ready to make the crop, click inside the rectangle. To cancel the crop, click outside the rectangle.

Selecting Crop from the Edit menu discards everything outside the selection.

and in RAM, and makes less traffic on the network.

Cropping and Page Layout

If you crop an image in a page-layout application, like Adobe PageMaker or QuarkXPress, the full image remains available to the application; it's simply not all visible on the page (this is also true for Adobe Illustrator and Macromedia FreeHand). That is, the application doesn't modify the original file on your disk, so you can always go back and change your mind (see "Page Layout and Cropping").

However, the entire image (or a low-resolution preview of it) also remains inside your

page-layout file, taking up space. Let's say your design calls for three head shots, but all you have is a group photo.

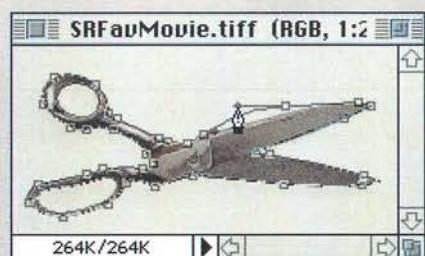
CROPPING IN PHOTOSHOP

To crop a scanned image in Photoshop, either use the crop tool, or make a rectangular selection with the marquee tool and select Crop from the Edit menu. In either case, Photoshop discards pixels; after you save the image, you can't get them back.

Don't import the picture into your page, crop to select the first head, then import the photo again and crop for the

Photoshop Clipping Paths

PostScript clipping paths can be any shape, but the file can take a long time to print or, if the paths are very complex, may not print at all.



1. Use the pen tool to draw Bézier paths in Photoshop. One path can contain multiple, unconnected paths.

second, and so on. Instead, use Photoshop's cropping to isolate each head and import the three small files individually.

When you print your document, the page-layout program uses either of two methods to crop the image, depending on the image's file format. Either the program sends just the image data it needs to output the cropped image to your PostScript printer, or it sends the entire image to the printer along with instructions on how you want to crop it (called a *clipping path*).

TIFF versus EPS

When you crop a TIFF image in QuarkXPress or PageMaker, the program sends only the image data necessary to print the job. On the other hand, if you have a 10MB EPS (encapsulated PostScript) file and you crop it down to a small square, the program sends all 10MB to the printer when you print your page. That means using TIFFs can offer an incredible time savings *every time you print*.

Sometimes, however, you have to use an EPS—for duotones or clipping paths with XPress, for instance. In that case, first crop the image in Photoshop to get the smallest file possible. (By the way, you already know you shouldn't

use PICTs, right? They're not suitable for professional print publishing work.)

Time-Consuming Calculations

When the printer receives a clipping path, it performs the time-consuming task of carefully clipping out the unneeded parts of the image. Note that a clipping path is always a set of lines or curves, just like those from FreeHand or Illustrator—you can't have a clipping path with soft edges.

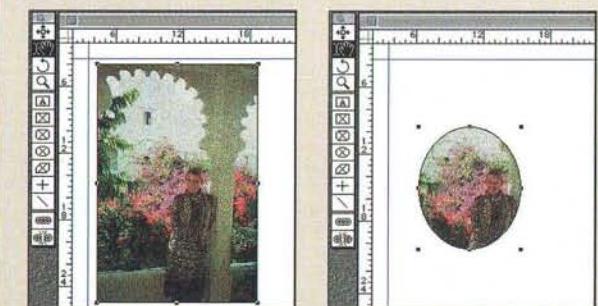
Let's say in real life you want to crop a photograph to a smaller rectangle with a pair of scissors. That's fast, right? Four snips and you're done. But if you want to pare it down to an oval, that might take you a little longer. PostScript printers have the same problem. The more curves or lines make up the clipping path, the longer the printer takes to perform the task.

Clipping Paths

You can make a nonrectangular crop in Photoshop, Illustrator, or FreeHand by drawing your own clipping path. In Illustrator you use the Mask feature; in FreeHand you use Paste Inside. In Photoshop you use the path tools, save the path with a name, then set it to be a clipping path (see "Photoshop Clipping Paths").

PAGE LAYOUT AND CROPPING

When you crop an image in a page-layout program, you can always recrop for a different effect. In PageMaker you can use the cropping tool or the Mask feature; in QuarkXPress you make the picture box smaller or change it to a different shape (like a polygon or an oval).



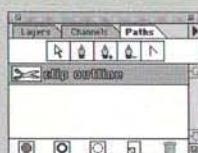
You now save the image as a TIFF or an EPS. However, at the time of this writing, only PageMaker recognizes TIFF images that have embedded clipping paths.

Clip or Crop

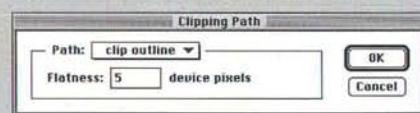
While many operations are easier on a computer than in the real world, it's clear that cropping and clipping are not among them. Seemingly minor differences in how you crop can be costly in minutes (which translate to dollars) spent on a project. I like using

TIFFs whenever possible, especially when I might be cropping in my page-layout application. My first choice is always to crop the image even before I get to PageMaker or QuarkXPress. ■

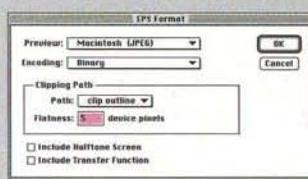
DAVID BLATNER is the co-author of several books, including *Real World Photoshop*, *The QuarkXPress Book*, *Real World Scanning and Halftones*, and *QuarkXPress Tips & Tricks* (all Peachpit Press). He presents at seminars and conferences around the country and in Japan. You can E-mail him at david@moo.com.



2. Save the path in the Paths palette by double-clicking on the path.



3. If you use PageMaker 6, you can save the image as a TIFF file. Choose Clipping Path in the Paths palette to turn the path into a clipping path.



4. If you save the image as EPS, set the path as a clipping path. Don't forget to set Flatness to 4 or 5.



5. The final printed image with the hard-edged clipping path.

Graphics Workshop

Creating and Using Customized Brushes in Painter

by Cathy Abes

ARTIST: At his studio, Portrayals, in Palo Alto, California, Jeremy Sutton uses Fractal Design Painter to create a wide variety of portraits, from celebrities to ordinary people. His clients have included

Apple, DreamWorks, and Virgin Atlantic Airlines. Armed with his PowerBook, Sutton frequently paints on-the-spot portraits—such as this one.

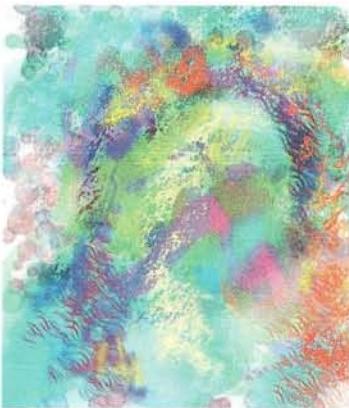
HOW IT WAS DONE: Sutton likes to push Painter's natural-media capabilities to the limit by customizing brushes to create particular effects. Here's a sampling of the ones he used in this portrait.

With a brush he called Viscous Mix, used mostly in the background areas, Sutton created a bubbly look, as if an oily base were rejecting a watery paint. Sutton saved each customized brush as a Brush Look (by choosing Brush Look Designer in the Brushes palette), which stores it in the Brush Looks library for future use.

Sutton used a brush he called Mountain Crumple, based on a paper texture called Mountains, to create the red and yellow spongy texture at the top of the hair. The brush used for the yellow-orange glowing highlight at the lower right he called Colored Distorto.

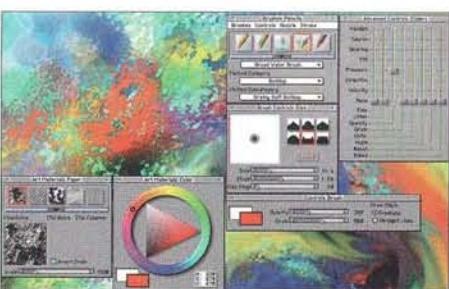
He created the hair texture with a standard large chalk and a paper texture, Rapunzel, from a library called Textures 2; he used Invert Grain to get just the wavy lines instead of the color between the lines. Moving the grain slider down to 12 applied the color only to the raised areas of the paper texture, accentuating the grain. Lowering the opacity to 50 percent gave him more control over the buildup of color. ■

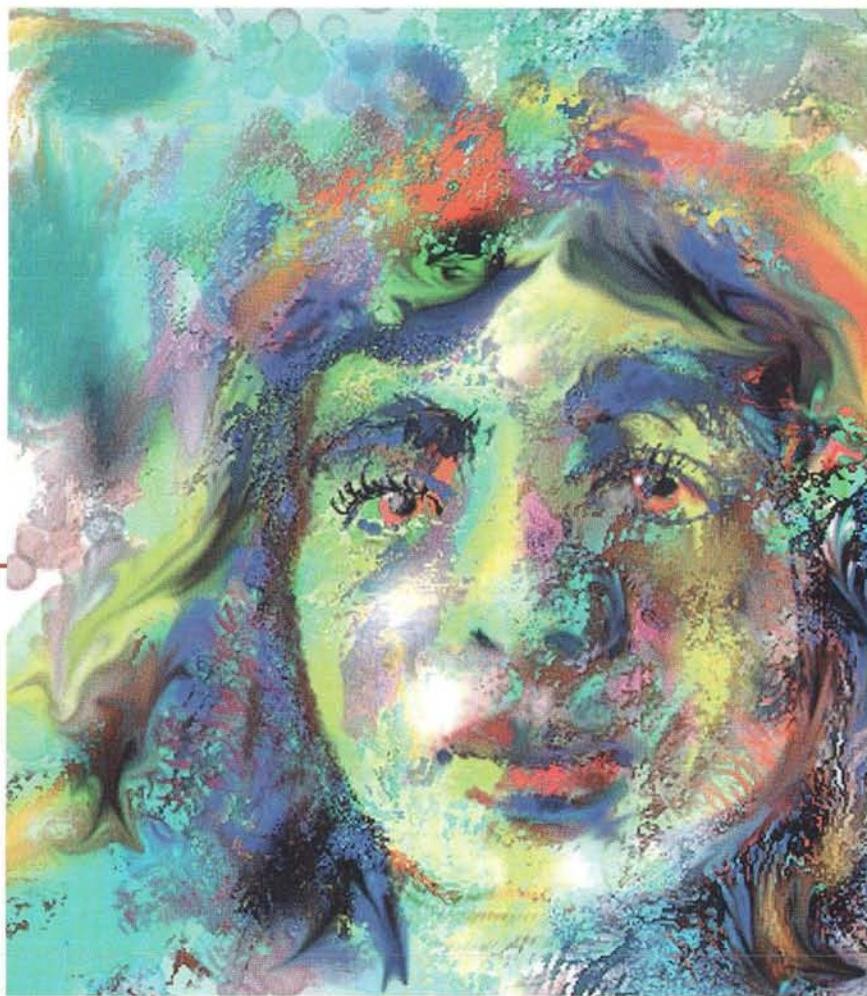
① To create the Viscous Mix brush, Sutton set Brush Type to Felt Pens; he set Brush Variant to Felt Marker, Method Category to Wet (simulating a watercolor brush in the Wet layer); and he changed Method Subcategory from its default, Soft Variable Buildup, to Grainy Wet Abrasive.



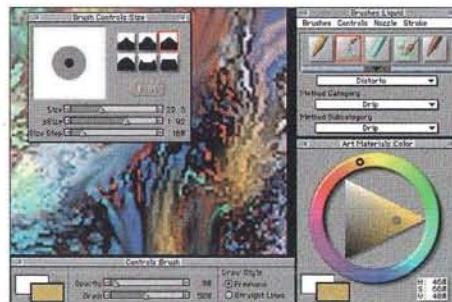
② In the Size palette, he moved the Size slider to 6.1 and the ± Size slider to the maximum; he entered 5 percent as the Size Step to set a minimum and maximum brush diameter that he could adjust interactively by changing parameters in the Advanced Controls: Sliders palette. There he set Pressure to modify Size; this let him vary the brush size as he painted—the more pressure he used, the larger the brushstroke.

③ For the brush called Mountain Crumple (used to create the red and yellow spongy texture visible in the top of the hair), he chose the Mountains paper texture (from the Texture Sampler library). He set Brush Type to Watercolor, with Broad Water Brush as the variant; he set Method Category to Buildup, and changed Method Subcategory from the default, Soft Buildup, to Grainy Soft Buildup.



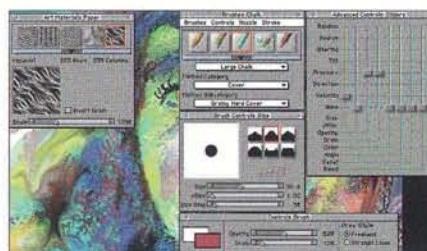


4 These changes applied brushstrokes to the background canvas, rather than the Wet layer, which brought out the grain of the underlying paper texture by applying color to the upraised areas and darkening that color.



5 To create the Colored Distorto brush, Sutton used Liquid as the Brush Type, with the Distorto variant; he chose Drip as both the Method Category and the sub-category. After setting Opacity to 8 percent, he changed the color to a yellow-orange and painted over a blue area.

6 For the hair, he used a standard large chalk with a paper texture, Rapunzel, from a library called Textures 2. Using Invert Grain and moving the grain slider down to 12 enabled him to apply color only to the raised areas of the paper texture, the wavy lines that make up the hair.



THE TOOLS

Hardware: PowerBook 280c with 24MB of RAM and 325MB internal hard drive; Wacom ArtZ II 6-by-9-inch graphics tablet.

Software: Fractal Design Painter 4.0.

Conflict CatcherTM 3

WINNER!

1995 MacUser Eddy Award for Best New Utility!

"Pros: Superb conflict-testing features..."

Cons: None."

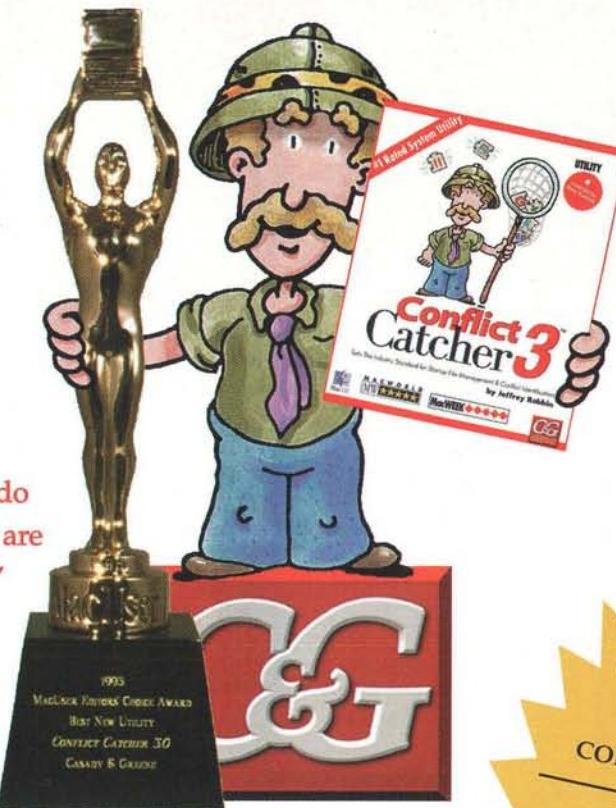
Macworld 9/95

MACWORLD
MW 

"No matter what you do with your Mac, odds are you need this utility."

MacWEEK 5/8/95

 MacWEEK



Conflict Catcher 3 sets the industry standard for startup file management and conflict identification.

As the only Mac utility to ever receive a 5 Star rating from Macworld, a 5 Diamond rating from MacWEEK and the MacUser Eddy Award for Best New Utility, the editors say you need Conflict Catcher 3—we know it will save you time and money!

The
Douglas
Stewart
Co.

INGRAM
MICRO



1-800-359-4920 Sales, 408-484-9228 Tech Support, 408-484-9218 Fax
22734 Portola Dr., Salinas, CA 93908-1119 URL: <http://www.casadyg.com>

"Don't start up without It."

MacUser 8/95

MacUser 

WATCH
FOR OUR NEXT TWO
STAR-STUDDED
COMING ATTRACTIONS

- Spell CatcherTM, formerly Thunder 7TM — the interactive, go-everywhere spell checker
- Keep It Simple SolutionsTM — "makes calculations as simple as dragging & dropping"

MacWEEK





Circle 58 on reader service card

Buyers' Tools

Affordable Color Printers

INK-JET DEVICES MAKE COLOR ATTRACTIVE, DESPITE SLOW OUTPUT

by Peter M. Stoller

Only a few years ago, "affordable, quality color printing" was an oxymoron. Today, it's a standard term in the SOHO (small office/home office) lexicon—printed in four-color liquid ink. Low-cost color ink-jet printers are used daily for everything from colorful correspondence to eye-catching presentations. The available print stock—from plain paper to transparency film—helps make an ink-jet printer surprisingly versatile.

With this growing variety of applications has come a growing variety of printers. To help you pick the right one for your needs, we compared six current mainstream models. All work on the same principle: spraying dots of cyan, magenta, yellow, and (with one exception) black ink to reproduce a rainbow of colors. (The Canon BJC-210 combines the three primary colors to produce black.) That doesn't make the printers the same, though; indeed, we discovered just how different they can be.

Macworld Lab subjected the printers to a battery of speed tests, pumping out reams of text and complex graphics and photographs. Then we laid output samples before our panel of experts, who judged image quality. We found several good options—but the right choice depends on your needs.

Expect to Be Impressed

The strength of ink-jet printers is their ability to produce high-quality output at a reasonable cost. These machines print at resolutions as high as 720 dpi—higher



KEVIN CARDINAL

than many laser printers. That doesn't mean better output, though. Ink soaks into paper, blurring details. But using special coated papers can reduce ink spread.

Our panel compared the printers' plain- and glossy-paper output of an Adobe Illustrator EPS graphic, an Adobe Photoshop color photo, and a multifont Microsoft Word document.

The Canon BJC-4100 was the favorite in all the plain-paper tests, with the richest colors and clearest details. Apple's StyleWriters are based on Canon print engines, yet the StyleWriters' output was inferior to the 4100's; we credit the driver, from GDT Softworks' PowerPoint driver/cable package (604/

291-9121; \$149), for the BJC-4100's superior output. (We used GDT's software because it is the only Macintosh driver available—Canon does not provide a driver.)

That result surprised us. With its own driver, the StyleWriter 2400 prints at 720 by 360 dpi in black-and-white mode, while the BJC-4100 with GDT's driver supports only 360 by 360 dpi, yet the BJC-4100's output quality was superior (GDT says its 720 by 360 upgrade should be available by the time you read this).

The Epson Stylus Pro has the highest resolution, 720 by 720 dpi. However, that resolution requires special paper; on plain paper the Stylus Pro is restricted to 360 by

360. The Stylus Pro washed out on graphics at 360 dpi, but it did fine on text—which is what you'll care most about when printing on plain paper.

The Hewlett-Packard DeskWriter 660C was a distant last on the text test; its output was so oversaturated that the entire document appeared to be in bold type, even in Best mode at 600 by 600 dpi—the highest plain-paper resolution of any printer we tested.

When we switched to glossy paper, the Stylus Pro shone. At 720 dpi, it easily took the gold for the Photoshop and text tests. Unfortunately, it exhibited severe banding in otherwise excellent Illustrator output, giving the BJC-4100 with PowerPrint the edge.

But in our Illustrator test, Apple's 2400 gained an even bigger edge when we installed GDT's \$149 StyleScript, an Adobe PostScript Level 2 interpreter just for StyleWriters. In fact, the 2400 jumped from the bottom of the heap to first place. The StyleScript output earned a nearly perfect score from the judges.

Holding down the low end were the HP DeskWriter 660C and Color StyleWriter 2200. The former had poor color accuracy and blocky text; the latter, a miniature printer geared toward travelers, produced slightly washed-out colors and lost some image detail.

Color Ink-Jet Printers: Quick Facts on Slow Printing

Company	Printer	Star Rating ^	List Price	Telephone
Apple Computer	Color StyleWriter 2200	★★★★/7.0	\$419	408/996-1010
	Color StyleWriter 2400	★★★★/7.2	\$429	408/996-1010
Canon Computer Systems	BJC-210	★★★★/6.2	\$299 *	714/438-3000
	BJC-4100	★★★★/7.1	\$399 *	714/438-3000
Epson America	Epson Stylus Pro	★★★★/7.2	\$999	310/782-0770
Hewlett-Packard	HP DeskWriter 660C	★★★★/6.3	\$499	208/323-2551

* Based on features, implementation, innovation, performance, reliability, ease of use, and value. (See Star Ratings section for full explanation.) LocalTalk access. * Requires Epson's special coated paper; restricted to 360 × 360 on plain paper.

Expect to Wait for Output

If quality output and cost-effectiveness are an ink-jet printer's strengths, speed is its weak spot, due to slow print mechanisms, serial-port bottlenecks, and dependence on the Mac for image processing. This last point means print speeds vary with different Mac models; note that only the Apple and GDT drivers are Power Mac-native.

Even with Power Mac-native drivers, print speed for a full-page graphic was about 10 minutes in our tests. The DeskWriter 660C took two to three times as long. The Stylus Pro took a mere 5 to 6 minutes per page at 360 dpi, but switching

to 720 dpi quadrupled print time—not surprising, since a 720-dpi image contains four times as many pixels as a 360-dpi one. (See the benchmark "Performance: Color Ink-Jet's Achilles Heel.")

For printing black-only documents, Apple has an ace up its sleeve: the High-Performance Black Ink Cartridge, which is included, increased speed more than three times. (Canon projects similar performance gains with its black-only cartridges, available as an option.)

Driver settings also impact printing speed. In the most extreme case, the Stylus Pro printed text more than six times as fast when set to 360-dpi, high-speed

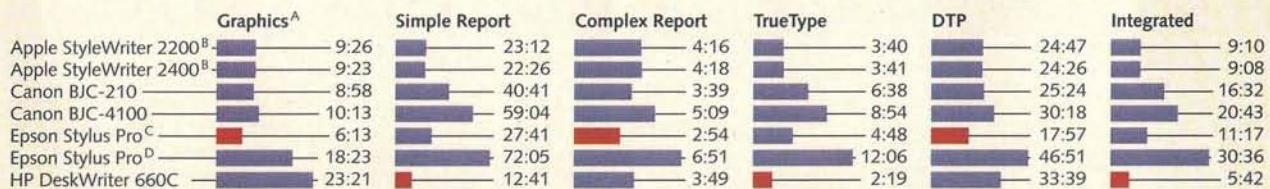


Performance: Color Ink-Jet's Achilles Heel

The ideal color printer would, of course, print instantly, produce perfect output, and cost nothing. But when you shop for a printer in the real world, you have to stake a claim somewhere within the three axes of the ideal. Color ink-jet technology gets you

pretty close to cost-free; it also gets you within sight of perfect output. Unfortunately, where color ink-jet lets you down is in printing speed—some of the printers we benchmarked took several minutes per page, even on relatively simple documents.

■ Best result in test. Products are in alphabetical order. All times are in minutes:seconds. Shorter bars are better.



^A Averaged scores of three tests (printer ranks and score spreads are similar in all three). ^B Performed some text-intensive tests about three times as fast when equipped with all-black cartridge than when equipped with standard four-color cartridge. ^C Set for 360 dpi. ^D Set for 720 dpi.

BEHIND OUR TESTS

Macworld Lab tested the printers with a series of real-world files. The Graphics score is an average of print times for an Illustrator file, a Photoshop file, and a PowerPoint file; because none of the printers have built-in PostScript, print times for PostScript and non-PostScript graphics were quite similar, and other graphics applications should show similar performance. The text-intensive tests, in particular the Simple Report test with a single font in three styles, require little processing and are therefore good tests of each printer's print engine. The DTP and Integrated tests mix

PICT, TIFF, and EPS images and colored text in a variety of fonts to see how each printer copes with complex files.

We tested all printers on a Power Mac 7100/80 running System 7.5.1 with 24MB of RAM and an internal 700MB hard drive. All printers were connected to the serial (modem) port. Both Canon printers required GDT Softworks' PowerPrint. Drivers were configured for best quality.—Macworld Lab testing supervised by Mark Hurlow and Jeff Sacilotto

Maximum Resolution	Ports (included/optional)	Options	Warranty (in years)
720 × 360 black; 360 × 360 color	serial/none	GDT StyleScript \$149; battery attachment \$129; rechargeable battery \$79	1
720 × 360 black; 360 × 360 color	serial/LocalTalk \$105	GDT StyleScript \$149	1
360 × 360	parallel/ c	BC-02 black-only cartridge \$25	2
360 × 360	parallel/ c	BC-20 black-only cartridge \$29	2
720 × 720 ^d	parallel, serial-LocalTalk \$149; Ethernet \$499	Epson PostScript interpreter with Pantone color calibration \$250	2
600 × 600 black; 600 × 300 color	serial, LocalTalk/none	none	3

nation.) * Requires PowerPrint (\$149; GDT Softworks, 604/291-9121). ^c GDT Softworks' PowerPrint/LT (\$299 for 25 users) provides

mode, and black and white, than with standard settings. At 2 pages per minute, it performed fastest. At 720 dpi, however, text printing was so slow that we'd reserve it for applications where high-quality text is critical.

Fill 'Er Up

Refills are a substantial hidden cost of operating an ink-jet printer—up to \$35 for color ink alone. The Canon and Apple ink tanks ran out midtest. The Epson and HP cartridges didn't, thanks to their larger capacities. Epson's and HP's consumables are less expensive than the other vendors', but how much less is hard to gauge. Estimates for consumables' life spans vary widely from vendor to vendor, being based on different—and dubious—criteria. We didn't come close to Apple and Canon's estimated 100 pages per ink tank, for example, because we printed full-page graphics, while they base their estimates on far less ink per page. Even using Apple's generous estimates, the Color StyleWriter 2200 costs a sobering \$1.10 per color page for ink alone about three times as much as any other printer.

You'll be refilling more than just ink wells, of course. All these printers come standard with a 100-sheet plain-paper tray, save the Color StyleWriter 2200, which takes only 30 sheets. They all handle a wide variety of media types and sizes. At \$25 for 200 letter-size sheets, Epson's special 720-dpi paper isn't cheap, but some other premium coated papers cost as much.

Talking to the Printer

Users can share Apple's StyleWriters via the bundled ColorShare software, but

ColorShare ties up the host machine whenever anyone on the network prints. A \$105 option adds LocalTalk networking to the Color StyleWriter 2400, but that option is not available for the Color StyleWriter 2200.

Epson offers both LocalTalk and Ethernet options for the Stylus Pro, at \$149 and \$499, respectively. Ethernet, though pricey, would really speed up those 720-dpi data transfers. For the Canon printers, GDT offers PowerPrint/LT (\$299 for 25 users) for LocalTalk networking—not exactly economical compared with Apple's and Epson's hardware options. Only HP's DeskWriter 660C comes with LocalTalk as standard equipment.

Getting Set Up

The Color StyleWriter 2400 comes ready for the desktop, but batteries aren't included with the portable Color StyleWriter 2200. For true portability, you need the \$129 battery attachment. Both the DeskWriter 660C and the Stylus Pro lack a serial cable; the cable is less than \$10 extra, but think how you'd feel if you got your new printer home and then discovered you couldn't use it.

Aside from this, setup couldn't be easier. Installing the ink cartridges is literally a snap. Then you just plug in a cable, run an installer, and restart. It shouldn't take more than ten minutes to get any of these printers up and running.

The Last Word

We weren't wowed by the DeskWriter 660C's poor output and speed, nor by Canon's also-ran BJC-210, but all the other printers are fine choices for the right user.

The Stylus Pro costs twice as much as the other printers, but you get what you pay for in print quality and flexibility. For the best graphics in this bunch, get the PostScript option and the special paper—and a deck of cards for playing solitaire. If you print only business letters and bar graphs, the Stylus is overkill.

The BJC-4100 and Color StyleWriter 2400 are nearly identical. With PowerPrint, the BJC-4100 prints slightly better and costs slightly more. Apple's printer comes with ColorShare, works with StyleScript, and has a relatively inexpensive LocalTalk option. The BJC-4100, however, has a longer warranty and works with PCs; the StyleWriter is Mac only. Either one will nicely complement the average desktop.

Finally, the Color StyleWriter 2200 is the only choice for color printing on the go, and it's close to the equal of the Color StyleWriter 2400 in output quality. However, the high cost of consumables and the lack of a LocalTalk option make it appropriate only for road warriors. ■

PETER M STOLLER (afcpcpeters@aol.com) is a Los Angeles-based Macintosh consultant. He delights in solving arcane Mac problems in America Online's Mac OS forum.

COLOR INK-JETS



Macworld Lab tested six color ink-jet printers to compare for speed, color accuracy, and image clarity.

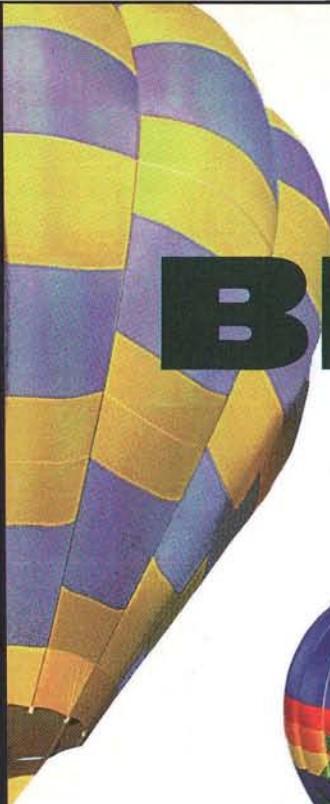
High End

★★★★★/7.2 **Epson Stylus Pro** This printer is in a class by itself when it comes to output quality and features. For an ink-jet it's expensive, but graphics professionals should consider it as a low-cost alternative to a dye-sublimation printer. **Company:** Epson America. **List price:** \$999.

Midrange

★★★★★/7.2 **Color StyleWriter 2400** It produces exceptional PostScript graphics with GDT StyleScript. **Company:** Apple Computer. **List price:** \$429.

★★★★★/7.1 **BJC-4100** This printer noses past Apple's StyleWriter 240 in most output-quality categories. **Company:** Canon Computer Systems. **List price:** \$399 (requires PowerPrint, \$149).



REAL BIG COLOR®

starting at \$12,995*



The solution for all your digital printing needs—from color laser copier originals to 54-inch Big Color.

Real Big Color® comes only from LaserMaster. And it's now available at a price that will make your spirits soar!

Now every business can afford the consistent, accurate color and photo-realistic quality that have made DisplayMaker™ Pro *The Professional's Choice* for large-format digital color printing.

The new ColorMark Software/RIP provides outstanding color, fast file processing, and other productivity features that make Big Color printing simple and efficient.

Get affordable, gorgeous, real Big Color. Call for details today!



ColorMark™ Color Management System
Prints Right—First Time™

(800) 428-5936

DEPT. L74

LASERMASTER®

The Professional's Choice®



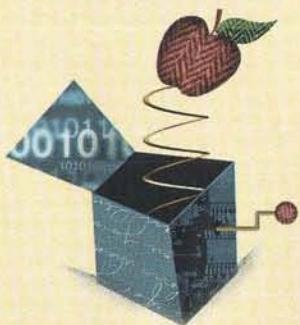
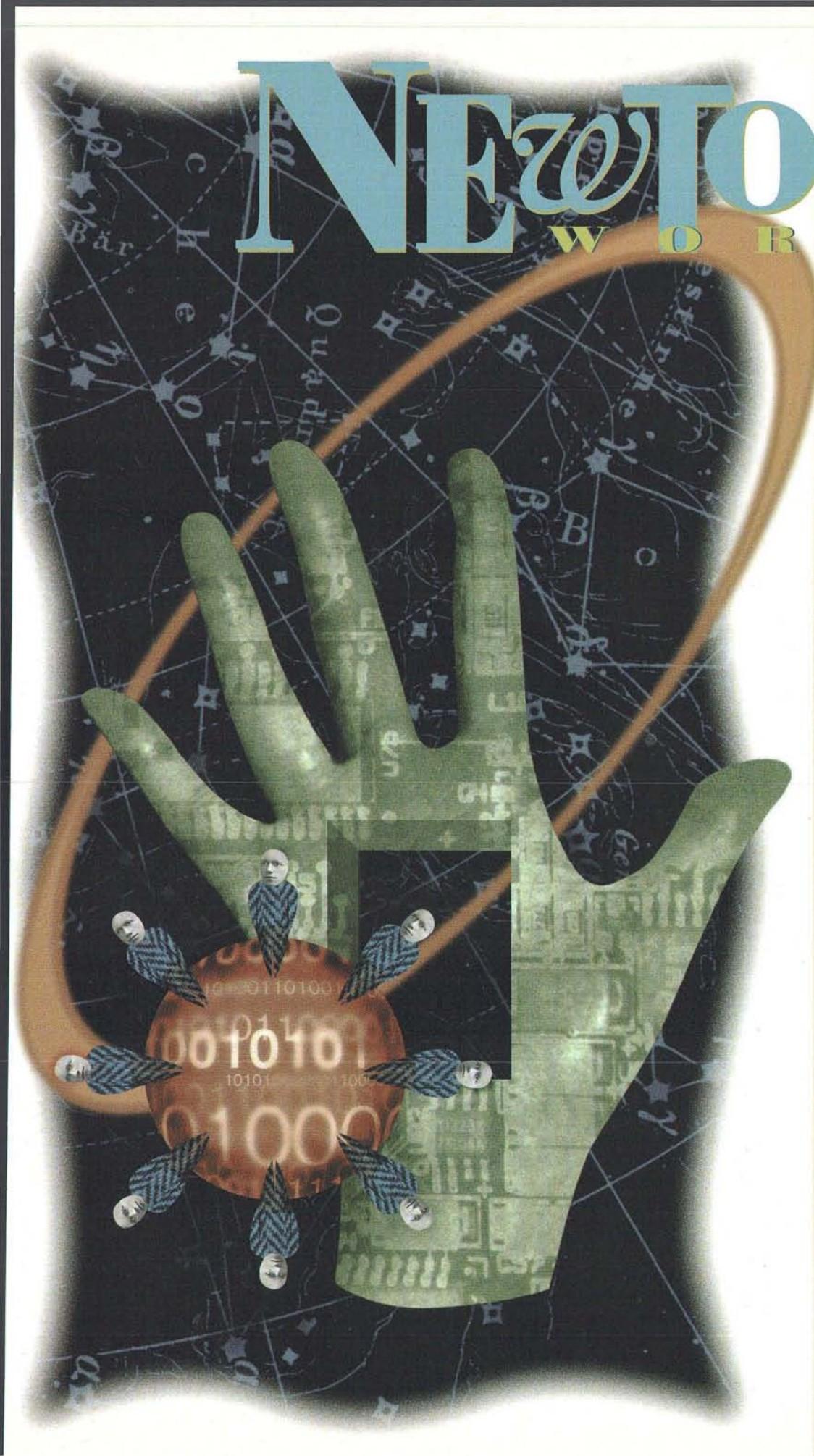
* Requires a dedicated Windows™ NT-compliant system.

©1996 LaserMaster Corporation. (612) 944-9330; In Europe call: (31) 2356-22000. These products incorporate the PowerPage interpreter from Pipeline Associates, Inc. Prices in U.S. dollars and valid in the U.S. only. Prices and specifications subject to change without notice. This ad was produced using PressMate™ FS chemical-free film. Contact us on the Internet at <http://www.lasermaster.com>

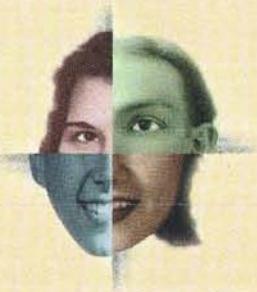
Circle 103 on reader service card

NEwTON

WORLD



CONNECTIVITY
Communicating
With Newton



REAL PEOPLE
Newton 2.0 Goes
to Work



NEW APPLICATIONS
Mobileware for
Business and
Pleasure

Edited by
Bronwyn Fryer

When did I talk to this person...!

Where did I jot that down...!

Was it Jones & Jones or Smith and Smith...!

How much more do I need to make my quota...!

When was that bid due...!

Who is the decision maker...!

...*%#@ +#!? .%..^&#@. \$+...##\$@! ..* & .%\$.#*&*\$....

This is your brain.

ahhhh...

...EVENTS...OPPORTUNITIES...COMPANIES...CONTACTS...NOTES...CHECKLISTS...

This is your brain, with Locomotion.TM

Link-Optimized Contact & Opportunity Management for Professionals in Motion!

Suffering from information overload?

Introducing LocomotionTM from PenUltimateTM Inc.*—the first *truly mobile* contact and opportunity manager that helps you eliminate mental clutter and focus energy on fulfilling your professional and personal opportunities.

It runs on the ultra-portable Apple^{*} MessagePadTM (and other PDAs equipped with the NewtonTM 2.0 Operating System) so it fits in your hand, pocket, purse or briefcase. Desktop computers are invaluable tools for organizing and managing impossibly large volumes of data... that is, as long as these tools are readily accessible *and* convenient.



The Apple^{*} MessagePadTM

With its very powerful linking and searching capabilities, LocomotionTM on the Apple^{*} MessagePadTM can be used *anywhere* to record, manage, organize and access information quickly and easily.



Powerful Link-Optimized Core Modules

And, when remote access to a central server is required, multiple LocomotionTM users can easily exchange, synchronize and consolidate any or all of their information with LocomotionTM for Windows,TM a complementary, PC-based utility. LocomotionTM for WindowsTM provides selective backup into an MS-ACCESSTM format as well as data review and edit capabilities for all LocomotionTM data. The LocomotionTM for WindowsTM utility also allows you to exchange and synchronize LocomotionTM data with a wide variety of popular PC database programs, including GoldMineTM from ELAN Software.TM

Take this opportunity to give your brain a break...

Call PenUltimateTM at 714-442-6700 or FAX a request to 714-476-8411 or send us an email to locosale@deltanet.com to receive information about LocomotionTM on the Apple^{*} MessagePadTM – a *truly mobile* business information management solution.

LocomotionTM
Link-Optimized Contact and Opportunity Management
for Professionals in Motion!

SEE US IN MOTION ON THE WORLD WIDE WEB IN FEBRUARY!
(Our email address is locosale@deltanet.com)

Circle 32 on reader service card

*The developers of SalesForceTM

LocomotionTM, PenUltimateTM, the PenUltimateTM logo, and SalesForceTM are the trademarks of PenUltimateTM, Inc. All other product names, company names, product logos and company logos are the trademarks of their respective companies. © PenUltimateTM, Inc. 1995. All Rights Reserved.



PenUltimateTM
SOFTWARE SOLUTIONS
FOR MOBILE COMPUTING

Communicating With Newton



If you thought you had to be plugged in and sitting down to send e-mail, receive a fax, check out a CompuServe forum, or surf the Web, it's time to think again.

BY NICK WINGFIELD

ILLUSTRATIONS / JOYCE HESSELBERTH

A computer without communications features is like a cat without its meow. Like it or not, we're knee-deep in modems, e-mail, Web surfing, and network computing, thanks in part to the radical growth of e-mail and the Internet.

With mobility as their *raison d'être*, the newest generation of personal digital assistants are really two-part computing devices: part personal information manager, part intelligent communicator. For these purposes, PDAs like Newton are far superior to laptops for on-the-go users (see sidebar, page 4). Instead of lugging a \$2,000 laptop along on business trips just so you can check e-mail and your schedule, you can get a PDA with the same capabilities for a third of the price and an eighth of the weight.

"E-mail and scheduling are exactly the kinds of applications I expect my Newton to replace," says Sandy Smallens, senior director of multimedia at Atlantic Records, based in New York. "Laptops are a pain in the ass to check in at airports."

To this end, Apple built its radically improved Newton 2.0 operating system from the ground up with mobile communications in mind, and its resident e-mail, fax, and desktop connectivity facilities show several marked improvements. Yet many of the most useful of Newton's communications-centered applications aren't coming from



REAL PEOPLE

Michael Dorf: Timing the Music

"In the music business, you gotta be cool," says Michael Dorf. As president of the Knitting Factory, Manhattan's avant-garde jazz club and record company, Dorf found that carrying a laptop backstage—where he does most of his concert and festival scheduling—was not only awkward, but decidedly uncool. "I'm on the business side of things, but I still have to look hip."

Dorf, who has used a PowerBook since day one, says that his recent conversion to an Apple Newton 2.0 MessagePad 120 from a laptop has not only upped his hipness factor, it's given him greater flexibility. "When I'm at a club, I don't want to be carrying around a PowerBook or, for that matter, a briefcase. Now, because of my PDA, I don't need either. I'm hands free."

Dorf relies primarily on the calendar program Now up to Date! (Now Software, 800/275-1669) which runs on his PDA as well as the networked Macs in the main office. "To have the Knitting Factory's complete calendar right at my fingertips is a big advantage," says Dorf. "Now, no time is wasted. If I've had a conversation with someone backstage—whether it's in Tokyo, Zurich, or uptown New York—I'm able to relay that information immediately back to the company and synchronize calendars." —Leslie Crawford

Cupertino, Apple's home town, at all. Independent software and hardware developers are driving much of the innovation behind Newton communications, from two-way wireless PC cards to LAN e-mail clients to World Wide Web browsers.

On the E-Mail Trail

With Newton 2.0, Apple succeeded in making all of the PDA's resident applications a kinder, gentler experience. (The new operating system even won the Fall Comdex '95 Best of Show award.) For example, handwriting recognition, which so limited the original Newton's usefulness, is radically improved. But nowhere is the benefit more obvious than when you compose e-mail.

Out of the box, Newton 2.0 does include some basic networking capabilities in the form of AppleTalk, Apple's LAN protocol software. Through the serial port, you can plug into a networked printer or synchronize your

Newton data with Newton Connection Utilities (see sidebar, page 10) running on a server. But if you want to send or receive e-mail or faxes, you'll need a modem. For some mysterious reason, Apple refuses to put an internal modem in the MessagePad (Apple's Newton hardware, of which there are a few versions). This forces Newton users who want e-mail or fax capability to purchase a separate modem, which is about the size of a KitKat candy bar, or a more sleek PC card fax modem.

Once you've got the modem, however, Newton's resident fax and e-mail communications capabilities get you moving right along. For example, its built-in e-mail client for Apple's eWorld online information service allows you to exchange text messages with other eWorld members on Macs, Windows PCs, and Newtons. With eWorld's Internet gateway, subscribers can also send e-mail to Internet users, as well as to

Newton Versus the Laptop: Which Is Better?

Like other PDA devices, Newton is clearly a cousin to another kind of mobile computer: the laptop. The two devices support the same basic communications applications: fax, e-mail, and information access through software such as Web browsers or database clients. As with Newton, laptop users rely on synchronization software to keep their mobile applications in touch with desktop computer applications. With Apple's recent release of a midsized keyboard that plugs into Newton's serial port, it's even tempting to call Newton a pint-sized lap-

top of sorts. And if you're ready to put down around \$90, you get an input device that never has handwriting-recognition problems.

But, when choosing a communications platform, it helps to align expectations with reality. Newton isn't designed to deliver

the kind of horsepower, graphics capabilities, and overall flexibility that laptops can. Nor can PDA users plug into a network like the Internet as full and equal peers to desktop and computer users. While your cohorts with PowerBooks and ThinkPads are opening e-mail with attached

Microsoft Word documents, you and your PDA-using sisters and brothers are limited to ASCII text e-mail.

Also, contrary to what you were taught as a teenager, size does matter. Newton's smallness is its chief asset, but smallness also means sacrifices in screen quality. Some experts say Newton's tiny screen seriously limits its appeal as a platform for e-mail and other communications applications.

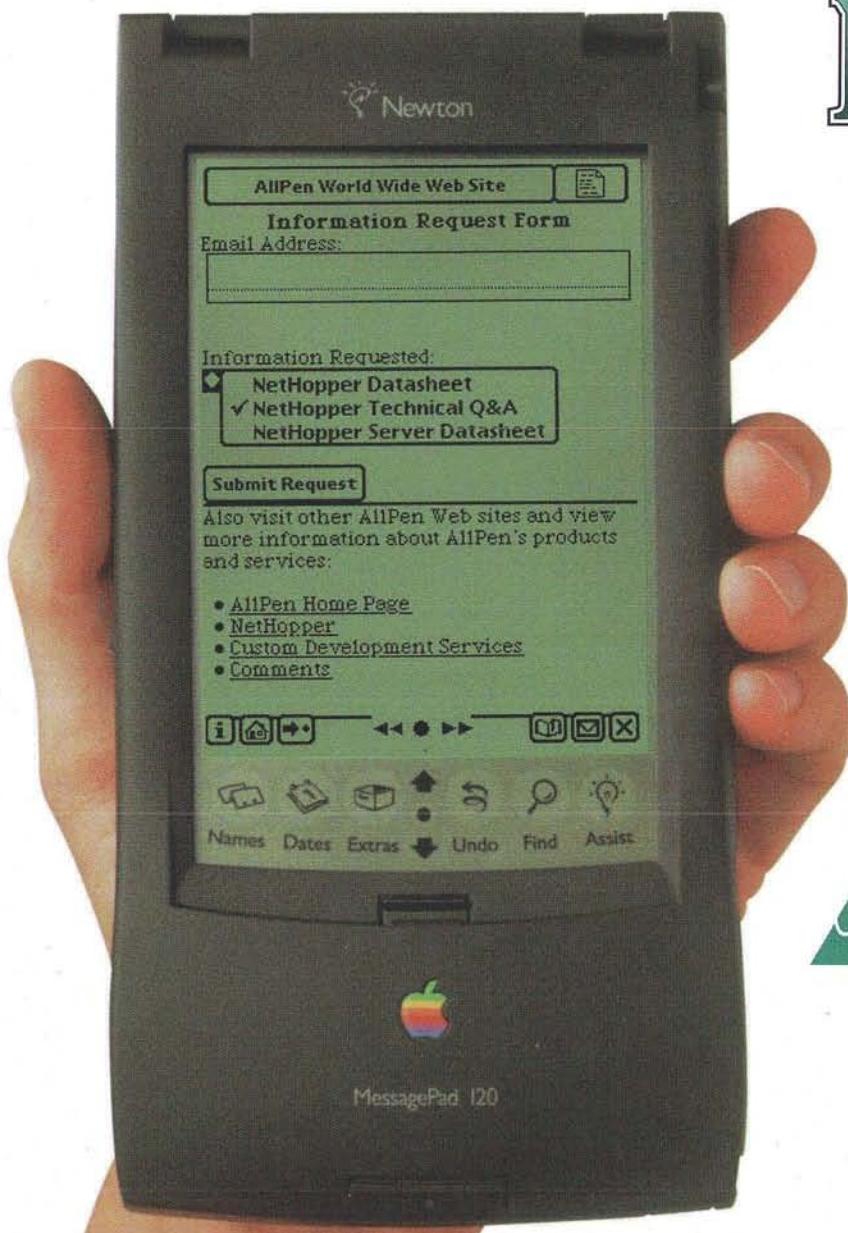
Still, if all you really need is a personal information manager that can let you talk to the outside world—and it with you—you may find Newton an intelligent investment. And it sure relieves the pressure on that sore lower back.—N.W.





NETHOPPER

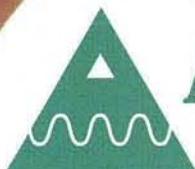
The World Wide Web Browser for the Newton



Now you can tap the vast resources of the internet from any location at any time. Use NetHopper™ to check stock quotes, find sports scores, or even order airline tickets! NetHopper puts the World in the Palm of Your Hand!™



Newton®

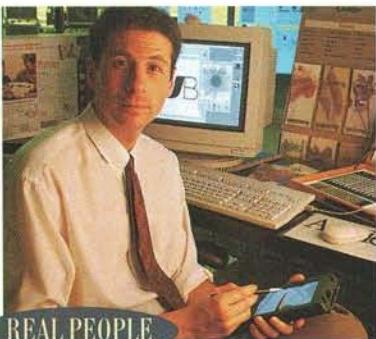


ALLPEN
SOFTWARE, INC.

51 University Ave., Suite J
Los Gatos, CA 95030
Phone: (408) 399-8800
Fax: (408) 399-4395
Email: NetHopper@allpen.com
WWW: <http://www.allpen.com>

Circle 21 on reader service card

AllPen is a registered trademark of AllPen Software, Inc. NetHopper and "The World in the Palm of Your Hand" are trademarks of AllPen Software, Inc. Newton and the lightbulb logo are registered trademarks of Apple Computer, Inc. All other trademarks referenced are property of their respective owners.
© 1996 AllPen Software, Inc. All Rights Reserved



REAL PEOPLE

Victor Zauderer: Breaking Out of Books

Victor Zauderer's life may be wrapped up in the paperbound world of book design and publishing, but he spends most of his working hours reading and writing with a Newton. A director for The Understanding Business, a publishing and book design firm located in San Francisco, California, Zauderer is virtually bound to his Newton 2.0 MessagePad, using it to send and receive faxes, send and receive e-mail, take notes, make call logs, track his time, and schedule appointments. "It's never out of my hands," he says. "I can write up an entire contact in less than a second."

The Understanding Business publishes graphical, easy-to-understand books such as the Access Travel Guides (recently sold to HarperCollins). In addition to using the Newton all day long to manage their business, Zauderer and his colleagues test-drive their publications through other people's PDAs. From an address on the World Wide Web (<http://www.info.apple.com/newton>), Newton users can download general information about a book's contents, a sample of writing, and information about and how to purchase it. The company also plans to ship its publications in both print and electronic MessagePad form via Newton online interest groups and Web sites and Understanding's own Web site.

Zauderer thinks the MessagePad is a logical way to market and publish sophisticated information. "People who buy Newtons are already a very specific group who are interested in complicated topics," he says. "It's a perfect communications vehicle." —Marie D'Amico

subscribers to commercial online services, such as America Online, CompuServe, and Prodigy. The resident e-mail software also allows you to exchange any Newton object—for example, a business card from Names, a calendar appointment from Dates, or a NotePad drawing—with other Newton users. (Unfortunately, Mac and Windows PCs can't receive Newton objects, just plain text.)

In addition, Newton 2.0 lets you send a fax or e-mail to multiple recipients through a batch transmission feature. (Beaming, which allows Newton to wirelessly exchange objects with other nearby Newtons, also supports batch transmissions, as well as the exchange of software packages.)

Newton 2.0's built-in communications capabilities aren't perfect: though Newton's In Box makes it easier to receive faxes, Newton's resident e-mail client still lacks some basic filtering capabilities, for example, that would allow you to reject incoming messages over a certain size before they're downloaded or to file messages automatically from a particular sender into a designated folder.

Fortunately, independent software vendors (ISVs) aren't waiting around for Apple to take care of these issues. A host of third-party developers now provide add-on applications that fit a range of communications needs. (Indeed, the breadth of third-party products available really demonstrates how far Newton has come as a platform.) Here's a roundup of the chief offerings.

ONLINE SERVICE APPLICATIONS If you're not an eWorld fan, there's no reason you can't use your favorite online service. America Online aficionados can use Catamount Software's (802/863-5256) Aloha, a simple \$50 program that allows you to send and receive e-mail from your AOL account via modem. Another

firm, Black Labs (303/938-8580), has created a Newton client for the CompuServe Information Service (CIS) called CIS Retriever (\$99), which allows users to access CIS discussion forums, news, and stock quotes, in addition to e-mail. The company offers a similar software program for First Class bulletin board systems, called FirstClass Retriever+ (\$99). There's also a more generic, less graphical communications program from Ex Machina (212/843-0000), PocketCall (\$119), which lets users access CIS e-mail and forums, as well as text-only BBSs and Internet UNIX-shell accounts provided by companies such as Netcom.



LAN E-MAIL Newton's success as a personal communicator for mobile professionals depends, at least partly, on how well it integrates with office information systems. For users of QuickMail, a LAN-based e-mail software package for Macintosh and Windows PCs, CE Software (515/221-1801) offers En-

Route, a \$129 Newton client for remotely accessing e-mail on QuickMail systems via modem. EnRoute allows you to view your QuickMail inbox online so, for instance, you can avoid downloading e-mail with bulky attachments. It also integrates nicely with Newton's resident NotePad and Names applications, with a cool feature for simplifying addressing of QuickMail messages. CE Software also offers a wireless e-mail client, called MobileVision (\$875 for five users). Designed for use with Motorola's Marco wireless communicator, the software forwards mail from QuickMail, Microsoft Mail, and cc:Mail systems to Marco, employing user-defined criteria to filter messages.

Users on Microsoft Mail and Lotus cc:Mail LANs have a wired option to choose from as well: River Run Software

The New, Enhanced Apple MessagePad 120.

The new Apple® MessagePad® 120 is powered by the just-released Newton® 2.0 operating system, recent winner of "Best of COMDEX" in its category at COMDEX '95.



You're organized while you're mobilized.

Weighing only 1 lb., the MessagePad 120 has the functions of an electronic organizer, and more. It stores hundreds of names, phone and fax numbers, street and e-mail addresses. It keeps track of your schedule. You can write to-do lists, notes, memos, or even make sketches. Its handwriting recognition has been greatly improved.



It not only organizes, it communicates.

The MessagePad 120 works with the way you communicate today. It can send and receive faxes. It also allows you to receive wireless paging messages and news bulletins. You can exchange e-mail via the Internet. It even has an optional keyboard so you don't have to carry a laptop.



An easy connection to your PC.

The new MessagePad 120 connects to both Windows and Mac™ OS-based computers. So you'll be able to create backup files, take your PC files with you, or access your PC from the road. That's because, with new connection software, you can easily download and upload data from your personal computer to your MessagePad 120.

Check out the new Apple MessagePad 120. You'll soon discover how it can make you more efficient and productive when you're on the go.

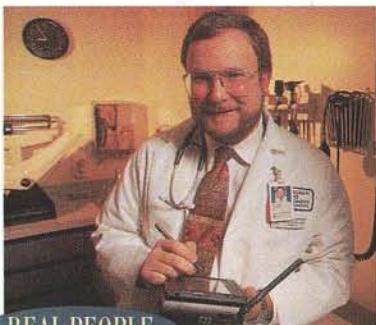
For the reseller nearest you, or to receive information via fax, call

1 800 909-0260°

Visit us on the Web at:
<http://www.info.apple.com/newton>

The New Apple MessagePad 120





REAL PEOPLE

Dr Steve Labhoff: Walking the Wards

Two years ago, when Dr. Steve Labhoff took charge of implementing computer technology to make physicians' jobs easier, he went straight for the Newton. "The doctors I work with need drug dosage, medical records, and other information quickly," says Labhoff, a research associate of internal medicine at the Decisions Systems Group of Harvard Medical School's Brigham Women's Hospital. "But this information is stored usually somewhere else—in a library, say, or in the medical records department."

Believing that PDAs have great potential for accessing this data, Labhoff launched the Constellation Project, a study conducted at Brigham Women's Hospital and Massachusetts General Hospital. Labhoff approached K2 Consultants (603/551-5544), a New Hampshire-based software design company, to design a custom medical reference package.

The K2 software includes a drug information handbook from the Texas electronic publishers, Education Research Laboratories, and the Medical Knowledge Self-Assessment Program from the American College of Physicians. It also includes a manual the residents wrote for interns, a medical calculator designed by Labhoff, and a phone book of residents in five local hospitals. "K2 created an indexing scheme that allowed the software to function quickly," explains Labhoff. That way, a doctor can look up a drug in ten seconds or less.—L.C.

Group's (203/861-0090) Mail on the Run! (\$129). Instead of connecting directly to an e-mail server, Mail on the Run! provides remote access to LAN e-mail by connecting to a user's Windows 3.1 or Windows NT workstation back in the office. That means you need to have a modem attached to your office workstation and to have your computer turned on at all times. Businesses with multiple Mail on the Run! users will probably want to dedicate a Windows NT. Qualcomm's (800/238-3672, ext. 6087) Eudora Light for Newton (free with the desktop version of Eudora, which costs \$89) connects via modem or serial connection to a Mac workstation (a Windows version is on the way) running the desktop version of Eudora. This enables users to transfer messages between PC and Newton. While useful, the product isn't really a full-fledged e-mail client, but rather an offline e-mail browser.

THE WEB E-mail may be the killer application of the Internet, but the Web is definitely the sexiest one. Enter AllPen Software (408/399-8800) with its NetHopper Web browser for the Newton (\$50). The company has wisely chosen to create a text-only browser so that Newton doesn't get clogged by Web page graphics, though users will still have an interface and features similar to the Mosaic and Netscape Web browsers, including the ability to follow hyperlinks. The software comes in two configurations: a client-server package that enables up to 20 Newtons to surf the Web through a Macintosh Internet server and a more consumer-oriented version that connects directly to the Internet through what's called a SLIP/PPP account. This last version is contingent on Apple's February release of a Newton version of TCP/IP.

Newton TCP/IP software will definitely benefit more applications than NetHopper and allow a greater degree of access to the Internet. In fact, some people think this could be Newton's calling. "An application that taps into the Web would sell more Newtons than anything else," says Steven Erde, director of the Office of Academic Computing at Cornell University Medical College in New York. "One of the things that's imperative is the ability to do a direct connect to the Internet, and Apple already has this fantastic appliance in the Newton."

Newton Unplugged

Given their druthers, most users would like access to e-mail or the capability of sending a fax whenever they please, wherever they are—in an elevator, in a car, walking down the street. For Newton users who prefer to have no strings attached, here are some options.

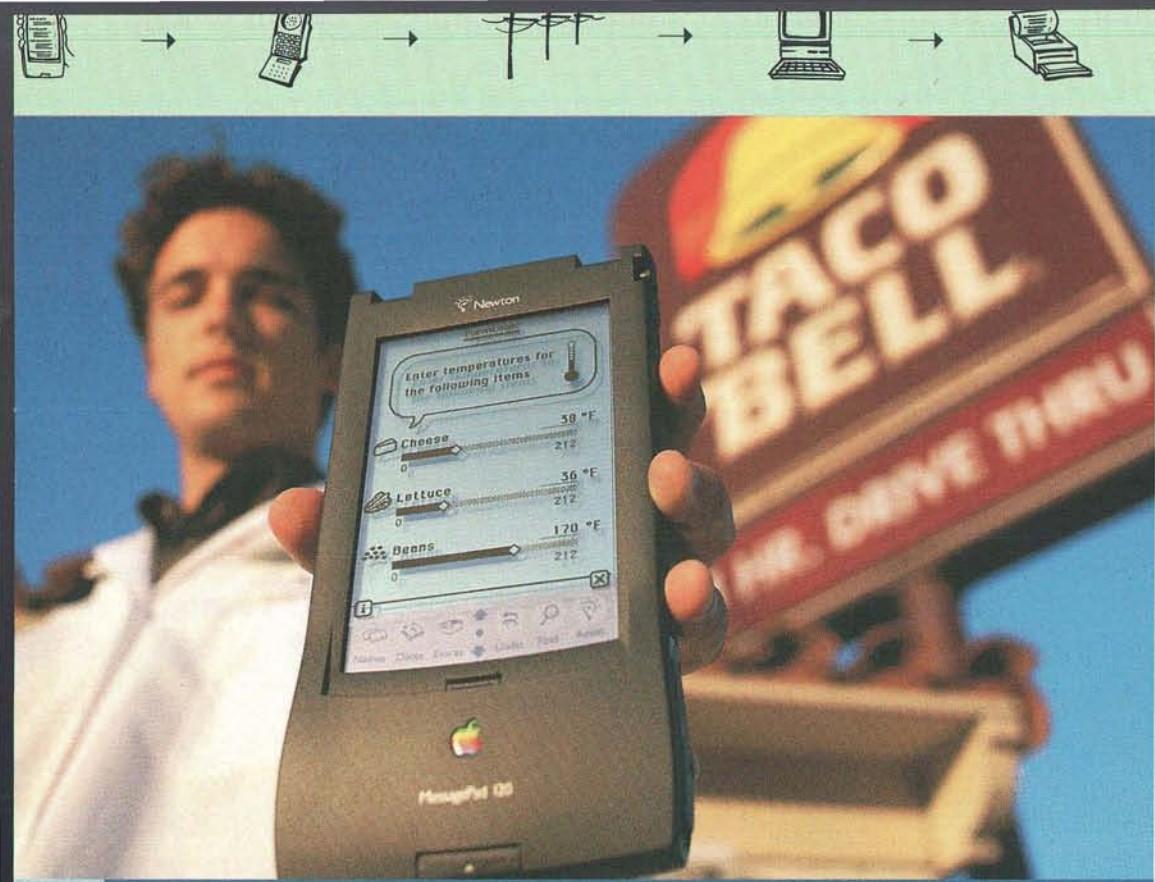
TWO-WAY COMMUNICATIONS For those who want two-way wireless communications from their Newton in a tightly integrated package, the obvious choice is Motorola's Marco (800/894-7353). In addition to

all of the standard features of Apple's MessagePad products, including PC card slot and serial port, Motorola's Newton comes with a built-in radio modem for connecting to Ardis, a nationwide wireless data network. (Unfortunately, Motorola has no plans to see a Newton 2.0 version of Marco—the device currently runs on



Newton 1.5—nor does it have any plans to offer a Newton 2.0 upgrade for existing Marco users.)

For users willing to stick with the older Newton operating system, Marco offers writers two e-mail options to choose from. The first, Radio Mail (free with Marco; 800/597-6245) gives users



**WRIGHT
STRATEGIES**

<http://www.wrightstrat.com>

Now that TACO BELL'S® auditors use FormLogic™, they can compile inspection results in the time it takes to make a bean burrito. (Hold the onions).

When Taco Bell Corp. ("Taco Bell")—an industry leader in fast food preparation, and Audits International were looking for a way to streamline the restaurant chain's quality inspection process, they turned to Wright Strategies' FormLogic. The powerful form-generating, data-reporting software allowed Taco Bell to move from paper-based inspections to much speedier electronic inspections, using the Apple MessagePad.

Now using a preprogrammed form that's extremely easy to navigate, auditors can evaluate more than 150 items, like food temperature and holding time. Using the MessagePad's stylus, they simply select the appropriate responses on the

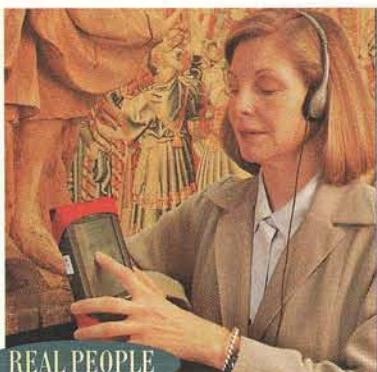
form and the report is completed in minutes.

The result is reduced paperwork, decreased response time, lower inspection costs, and vastly improved consistency. And instead of waiting weeks for inspection results, now each restaurant receives a report at the conclusion of the audit. Information is uploaded from the MessagePad to the company's database in minutes making report generation a snap.

To find out how easily FormLogic's efficient form distribution and data retrieval solution can integrate with your existing system, contact Wright Strategies at 1.800.666.1228. Maybe we'll even spring for some take-out.

©1995 Wright Strategies. FormLogic is a trademark of Wright Strategies. Taco Bell is a registered trademark of Taco Bell Corporation. Other brand names are trademarks or registered trademarks of their holders.

Circle 39 on reader service card



REAL PEOPLE

Jacquelyn Baas: Art History in Your Hand

In most art museums, human tour guides—some more interesting than others—explain the history and technique behind the paintings and sculptures to tour groups and school kids. But you can get a personalized guided tour on your hand-held Newton at the University Art Museum at the University of California, Berkeley, where museum director Jacquelyn Baas says that the technology “represents our commitment to making art accessible.”

The University Art Museum’s “pocket curator,” developed by Visible Interactive (415/433-7781) of San Francisco, lives in a Newton 2.0 MessagePad 120 with specially added backlighting, a fingertip user interface, headphones, heaps of memory, and a handy pouch. Turn it on, and you get a personal, interactive audio guide of the museum as you walk through it. The pocket curator discusses the exhibits in which you’re interested, when you want, for as long as you want.

The MessagePad’s IR port detects your location, and the unit can display choices based on the specific room into which you’ve wandered. The device describes a museum space, a room, or a painting, while you are touring; it can also schedule a tour for available time and print out the tour later.

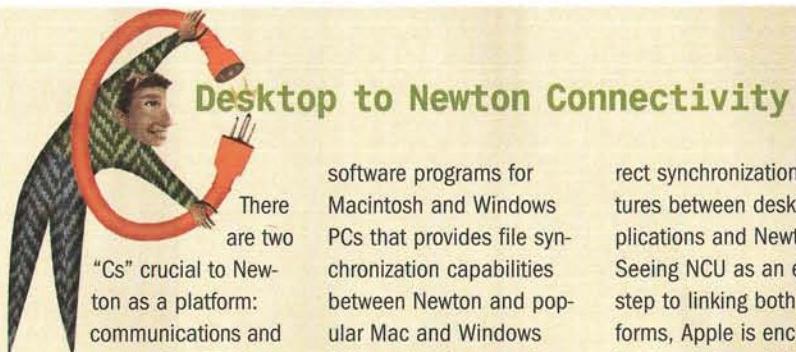
“Now the tour can follow you instead of you following the tour,” says Richard Rinehart, information systems manager for the University Art Museum.—Marie D’Amico

an e-mail account connected to the Internet. Targeting mainly Marco workgroups, Ardis Personal Messaging (free with Marco), on the other hand, provides an e-mail address that is accessible only to other subscribers to Ardis Personal Messaging. Besides e-mail, both Radio Mail and Ardis Personal Messaging offer fax and selected information services, including stock and news updates, though there are extra charges for both. Motorola has also kick-started development of other Ardis-based services aimed at vertical markets (see the sidebar on desktop to Newton connectivity, below), and some mail packages, such as Mail on the Run!, also support Ardis connections.

Apple MessagePad owners also have two-way options to choose from. Motorola offers an add-on wireless modem for the Ardis network, called the Personal Messenger 100D (\$750). This device is a type II PC card that slides snugly

into the MessagePad’s card slot. With it, users can access Radio Mail and vertical applications developed for Ardis. Just to complicate things, there’s another nationwide wireless data network, RAM Mobile Data, that is virtually identical to Ardis. To tap into the RAM network, you’ll need Megahertz’s (800/527-8677) AllPoints Wireless PC Card (\$499). Once you’re riding the airwaves, you can choose from Radio Mail or Wynd Communications’ (800/549-6000) Wynd-Mail, which includes e-mail, fax, and a feature for converting e-mail messages into synthesized voice phone calls.

THE VERTICAL CLIMB Hardware vendors are also setting their sights on vertical markets with Newton-compatible devices for creating wireless local area and wide area networks. With Dayna Communications’ (800/443-2962) Roamer PC card and serial devices, Newton users can wander wire-free within 150 feet of a LAN access



There are two “Cs” crucial to Newton as a platform: communications and connectivity. The latter enables Newton’s resident applications to stay in touch with desktop PC applications such as personal information managers and databases. Without desktop connectivity, many Newton users’ lives would effectively become schizophrenic, with data in parallel PC and PDA applications growing gradually more dissimilar.

Apple’s answer to this problem is Newton Connection Utilities, a set of

software programs for Macintosh and Windows PCs that provides file synchronization capabilities between Newton and popular Mac and Windows PIM applications, such as Claris Organizer, TouchBase Pro, and NetManage’s Ecco. Newton Connection Utilities also provides data backup capabilities so you have a copy of Newton’s data on your computer hard disk. With Newton 2.0, users can perform synchronization and backup one of three ways: serial cable, LocalTalk, or modem.

Ultimately, Newton Connection Utilities may be eclipsed entirely by di-

rect synchronization features between desktop applications and Newton. Seeing NCU as an extra step to linking both platforms, Apple is encouraging developers with software tools to embed “Synchronize With Newton” capabilities in their desktop applications. Already some have started, including Team Coordination (514/481-4647) with its TeamAgenda Mac scheduling software (\$549 for five users) and Now Software (800/275-1669) with Now Contact and Now Up-to-Date, two Mac PIM applications (\$150 plus \$30 for a synchronization module).—N.W.

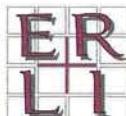


Ready reference at the point of care.

The ERLI Professional Medical Reference Series for Newton® PDA's.

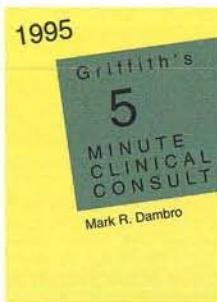
Reference information is rarely available where it's most valuable—at the point of care. With the ERLI electronic medical references, a Newton PDA becomes a mobile medical library, keeping key reference sources readily available at home or hospital, examining room or OR. Our Professional Medical Reference Series includes many of the most frequently used texts—Drug Information Handbook, 5 Minute Clinical Consultant and DSM-IV—and most are updated annually.

For information on how to put ERLI electronic medical references to work in your practice, call NewtonSource at 1-800-NEWTON-1 or visit the NewtonSource nearest you for a demonstration.

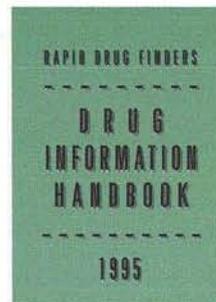


EDUCATION
RESEARCH
LABORATORIES
INC.

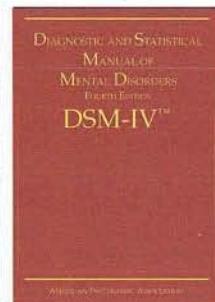
Putting electronic medical information into practice.



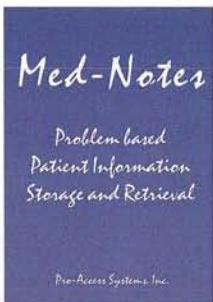
5 Minute Clinical
Consult
\$59.95 at
NewtonSource



Drug Information
Handbook
\$99.95 at
NewtonSource



The Diagnostic and
Statistical Manual,
Fourth Edition
(DSM-IV)
\$45.95 at
NewtonSource



Med-Notes
Patient Information System
Includes lists of findings for
40 common and important
chief complaints
Regularly \$149.95
NewtonSource Special
\$119.95

Experience ERLI at NewtonSource.

When it comes to specialized applications, NewtonSource is the business solutions source. In healthcare, ERLI is the clear leader in Newton medical information applications—and with our intimate knowledge of Newton technology, we can work with you one-on-one to combine ERLI reference sources and patient information systems with off-the-shelf software, accessories and services to make your MessagePad an invaluable tool at the point of care.

To see ERLI at work, come to NewtonSource in New York, San Francisco, Los Angeles and Chicago for a personal demonstration. Or call us for information.



NewtonSource
Personal Power Outlet™

800.NEWTON.1

Apple, the light bulb logo, MessagePad and Newton are registered trademarks of Apple Computer, Inc.

Circle 27 on reader service card

Friends in Need: Where to Get Support

With Best of Comdex kudos and glowing press reviews to back them up, Apple's MessagePad 120 loaded with the Newton 2.0 operating system "has been selling itself," according to George Giakouminakis, a sales representative for J and R Computerworld, a large retail outlet in New York City. "A lot of people come in and say, 'Give it to me,' without asking any questions. With the older one you had to do a lot more explanation."

While the new Newton is unquestionably easier to use, the hardware and software can

take some getting used to. In most cases, purchasers can receive rudimentary support and training from the dealer to get over the learning hump. But chances are that if you purchase a Newton from a store that also sells stereos and vacuum cleaners, you might not be getting the technical expertise that you need to answer tough questions.

Apple already provides a one-year warranty on the hard-

ware along with telephone support (800/767-2775) for the \$699 product. Though getting through on Apple's 800 line may make you wish you had taken up a time-passing hobby like knitting, the support comes straight from the horse's mouth.

Another excellent alternative is to purchase a Newton from one of the four Newton

Source stores (in San Francisco, Los Angeles, New York, and Chicago; call 800/639-8661 for information). These stores specialize in Newton and nothing but Newton, and their staffs know everything about both hardware and application software. Newton Source will preload the software you want and provide training; you can also sign up for lifetime on-site and telephone support. If something goes wrong, you can send your PDA in and receive a replacement within 48 hours while your unit is under repair.—Bronwyn Fryer

point indoors, 700 feet outdoors. The device uses the unlicensed radio spectrum, so businesses don't have to pay a monthly service fee. Digital Ocean (913/888-3380) has taken the integration between Newton and wireless communications a step further, introducing in January of this year a product called Seahorse. This is a ruggedized device based on the Newton 2.0 operating system with the option of wireless LAN, cellular digital packet data, global positioning satellite, or other wireless modules. A similar program, KPMG Peat-Marwick's (610/995-4400) SaleMate, enables wireless access to SAP R/3 Systems, a corporate sales automation system.

CELLULAR For a more versatile two-way wireless option, you may want to consider a cellular phone instead of a specialized data modem and service. With a cellular phone, Newton users can dial into the same services accessible via ordinary telephones, including online services, with the added bonus of being able to make voice calls. Connecting to AOL via cellular isn't as dependable as a regular phone connection, though; prepare yourself for fluctuations in transmis-

sion speed. You will need a cellular phone, a PC card cellular modem, and a cable for connecting the two devices. There are a number of PC card cellular modems for Newton, including Toshiba's (800/959-4100) NoteWorthy card and Motorola's (800/472-6242) Cellect card, which cost around \$230. The cellular modem may come with a connector cable, but be sure it fits your cellular phone before you buy it.

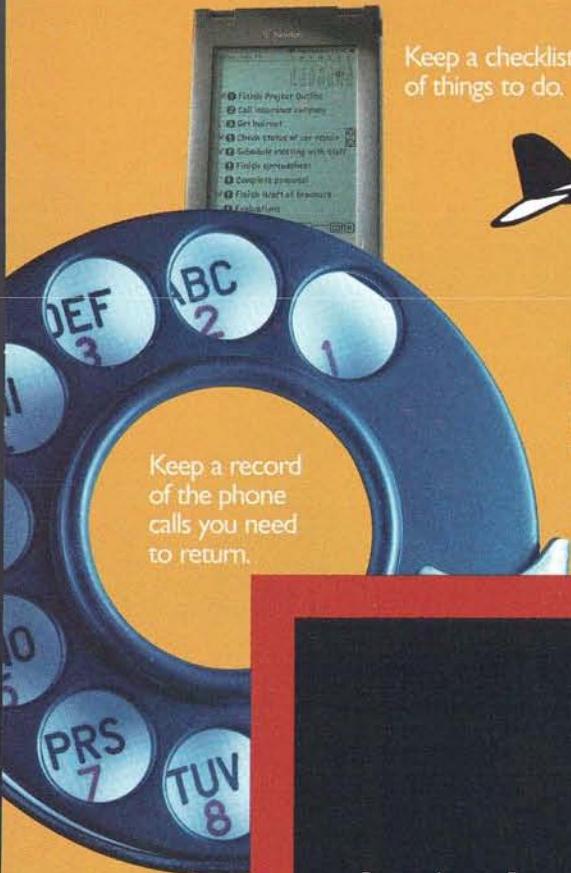
PAGERS Finally, if you don't have to respond to that e-mail anytime, anywhere, a great alternative to two-way communications is paging. Newton works with several receive-only PC card pagers, including Socket Communication's (800/552-3300) PageCard, priced at around \$399. The PageCard will store messages received when outside of Newton, but it also has some added smarts for assembling longer messages that have been split into multiple pages. It even has its own tiny LCD screen for reading messages, though viewing pages on Newton's screen is infinitely easier. Apple's Newton Systems Group is working on a Motorola NewsCard paging solution for 2.0, which should be available before summer.

Needless to say, you'll want to familiarize yourself with service charges before forking over for a wireless solution. Although pricing varies, you can expect to pay anywhere from \$40 to \$60 a month for average usage on the Ardis and RAM networks. Users on both networks are charged by the data packet sent and received. If you're not careful, those packets can add up to a big Alka Seltzer Moment at the end of the month when you get your bill. Cellular phone users are charged by the duration of their calls, so data calls cost the same as voice calls; as an example, expect a two-page fax to take a couple of minutes to send over cellular.

With Newton 2.0 riding in tandem with some encouraging third-party development, the platform is picking up its pace as an intelligent communicator. Who knows? Within a few years, we may see commuters checking e-mail on their PDAs instead of talking into cell phones. Let's hope their cars are equipped with automatic guidance systems.

Nick Wingfield (nick_wingfield@infoworld.com) is an editor at Infoworld who covers wireless communications.





Keep a checklist
of things to do.



Keep a record
of the phone
calls you need
to return.



Synchronize
your PDA and
PC calendars.



Back up all your Newton
data on your Windows PC.

Use Newton Press
to create a
book about your next
destination.

See what's new with Newton 2.0:
Catch us at <http://www.info.apple.com/newton>



Work smart.

Import the names
file from your
Macintosh into your
Newton PDA.



Get paged. Then reply to that urgent
message—wirelessly.

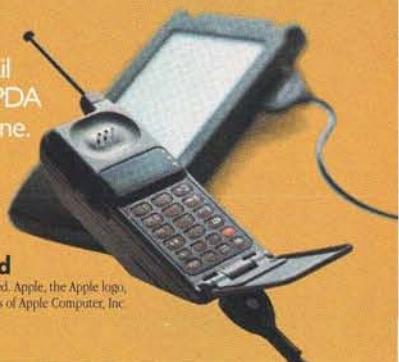


Jot down comments
on a fax your boss sent you.

Send e-mail
to colleagues—
even over
the Internet.



Use Intuit Inc.'s Pocket Quicken to track your
expenses from your business trip to Maine.



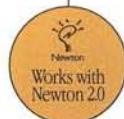
Check your e-mail
using a Newton PDA
and a mobile phone.

Circle 23 on reader service card

© 1996 Apple Computer, Inc. All rights reserved. Apple, the Apple logo,
the light bulb logo, and Newton are trademarks of Apple Computer, Inc.
registered in the U.S.A. and other countries.



a Ph.D. for Your Newton

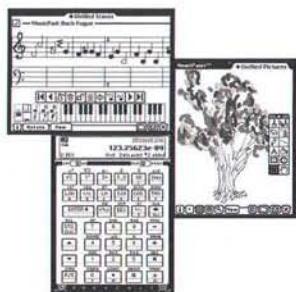


LandWareSM
Software for Terra Firma

Questions? Answers: <http://www.landware.com>
Ken Landau (t) 201. 347. 0031 (f) 201. 347. 0340
info@landware.com Orders: 1. 800. 526. 3977

*Developed by: PARAGRAPH the leader in handwriting recognition.

- proCALC Ex™
Count on this program to give you all your calculations.
- FreeStyle™ *
Learns the way you write so you will write no wrong.
- Quicknames Pro™
The last word in phone books—greatest functionality, easiest to use.
- Sync+
A timely solution to synchronize your Newton with Microsoft® Schedule+.
- MusicPad
A notable solution for portable composition.
- NewtPaint
Now your Newton can truly paint with a pen— and erase, too.
- KwikMenu
An integrated "short cuts" package to help you get around, fast.

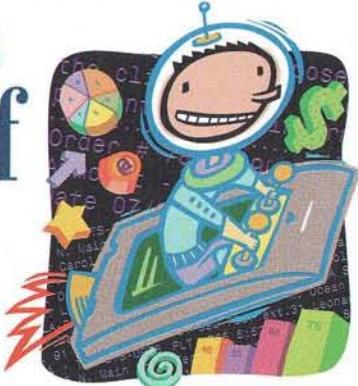


Also available from:

NewtonSource
Personal Power Outlet
800.Newton.1

Circle 30 on reader service card

Mobileware Takes Off



Whether you're on the ski slopes or on the treadmill, here's a selection of Newton 2.0-based software that will let you take your business—and pleasure—with you.

BY BRONWYN FRYER

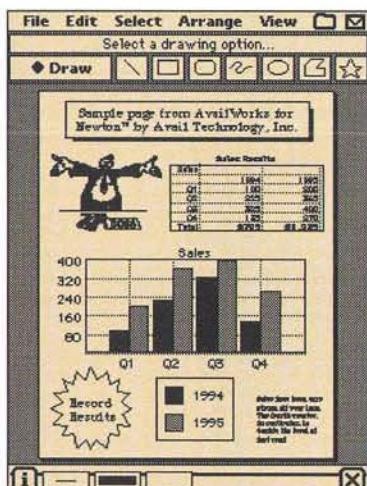


For the mobility-minded computer user, there are lots of applications out there for Newton 2.0 that can help make working on the go a bit easier—and even a little more fun. Here are just a few.

A SUITE DEAL On the desktop, all-in-one packages like Microsoft Works are an answer to word processing, spreadsheets, and graphics. But when you're in an airport working on a PDA, it's generally pretty tough to cut and paste together a reasonably nice-looking document.

Enter AvailWorks, a \$79 software package that lets you create a WYSIWYG document complete with text, graphs, and spreadsheet elements, then shoot it off to a recipient through an included fax modem utility.

AvailWorks: Avail Technology, 408/730-6855



Cut and paste text, graphics, and spreadsheet elements together using AvailWorks.

ILLUSTRATIONS / ROBERT ZIMMERMAN

PowerForms™

2.0 Compatible

FORMS AND DATA FROM YOUR COMPUTER TO YOUR NEWTON
FROM YOUR NEWTON TO YOUR COMPUTER

Eliminate paperwork and expedite data collection. PowerForms gives you the ability to create custom data-entry forms on either a desktop computer or directly on a Newton Personal Digital Assistant (PDA). Forms and information collected in the field may then be exchanged between the PDA and your desktop.

Pat Smith		DATE: 11/24/95
123 Main St.		TELEPHONE: *C.O.D.
CITY, STATE, ZIP: SIOUX, IL 68542		ORDER #: 8133625
Qty	Description	Price
1	Premium Unit	1,356.98
2	Connection Cables	94.98
3		
4		
5		
Tax		83.52
Total		1,437.46

SIGNATURE: Pat Smith

Fields Supported

- Text
- Check Boxes
- Radio Buttons
- Pop Lists
- Time & Date
- Formulas
- Table
- Currency
- Graphics
 - Pictures
 - Polygons/Ovals
 - Rectangles
 - Digital Ink/Lines

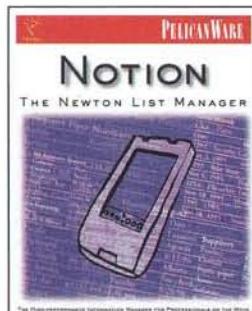
Macintosh and Windows compatible. Recommended 1MB or greater PCMCIA storage card.

210 Gateway
Suite 200
Lincoln, NE 68505
800-888-4344

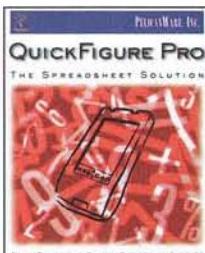


Circle 29 on reader service card

Portable Productivity



Notion
The High-Performance List Manager
• New Newton 2.0 Version
• Organize, Integrate and Communicate Vital Info
• Includes Notion List Designer



Quick Figure Pro
The Spreadsheet Solution
• New Newton 2.0 Version
• Landscape Mode
• Import/Export to Mac & Windows, including Excel



NewtCase
'Best-of-Breed Archiving'
• New Newton 2.0 Version
• Manage your packages and maximize system resources

*Dave MacNeill, Pen Computing Nov/Dec 1995 review of v2.2.

PELICANWARE

Contact your Newton software dealer or call 1-800-655-NEWT. PelicanWare, Inc. Voz (503) 221-1148 Fax (503) 221-8709 email:DonV@teleport.com. All major credit cards accepted.

Circle 28 on reader service card

ACT UP Symantec's best-selling contact manager turns your Newton into a great traveling companion. Besides managing contact names, addresses, and to-dos, you can use the \$100 package to sync up with your desktop ACT! package to

establish round-the-clock contact.

ACT! for Newton: Symantec, 800/441-7234

A DATABASE IN A BOX Databases aren't just the bailiwick of the wired-in world. Leverage is a simple, multifile database

program upgraded for the Newton 2.0 platform. You can create your own customized databases, link up with large database applications on the desktop, or link databases together. While the \$139 package supports only nine field types, it's great for simple selection, sorting and reporting.

Leverage: Balcones Software, 512/353-7259

F a s t e n y o u r s e a t b e l t ,



Newton is flying **Informed**®

Informed Filler™ for Newton means that your data always gets off the ground. The information you collect is sent straight to your Windows® or Macintosh® form. You can change it, sign it, print it, mail it, or...

Using Informed, your Newton data seamlessly fills in electronic forms, right on your desktop computer. From expense, order or survey forms to those specialty forms unique to your business — whether it's insurance, health care...or flying lessons!

Call us at 1-800-386-7244, and get Informed working for you. Or visit our Web Site at <http://www.shana.com> to learn more about Informed. Or you contact us directly by email (info@shana.com) or by fax at (403) 437 4381



Taking forms from the desk to the desktop... and beyond.

Circle 37 on reader service card

MILEAGE TRACKER If you use your car for business, you probably hate scribbling mileage and other travel-related costs onto scraps of paper. MPG, a \$30 package from Catamount software makes the task a one-stop shop that you can keep on your dashboard, on the seat, or in your glove box. You can use the software to track vehicle costs, fuel, maintenance schedules, and business trip mileage for one or many vehicles.

MPG: Catamount Software, 802/863-5256

DETAILS, DETAILS Filling out reports to bill clients for your time and expenses is unquestionably un-fun. With Time-Reporter 3.0, Iambic Software's \$100

Time Entry		Date: Fri 11/10
◆ Client	Healthy Cafe(100-a456)	<input type="button" value="?"/>
◆ Project	San Francisco Store	<input type="button" value="?"/>
◆ Activity	Audit	<input type="button" value="?"/>
<input type="button" value="7 am"/> <input type="button" value="10 am"/> <input type="button" value="1 pm"/> <input type="button" value="4 pm"/> <input type="button" value="7 pm"/>		
◆ When:	12:00 pm - 2:00 pm	
◆ Time:	2:00	
Meeting with agent		
<i>Success!</i>		
Timer:	<input type="radio"/> On <input checked="" type="radio"/> Off	<input type="checkbox"/> Submitted
<input type="button" value="New"/>	<input type="button" value="Special"/>	<input type="button" value="A"/>
<input type="button" value="B"/>	<input type="button" value="C"/>	<input type="button" value="X"/>

Keep track of your expenses and time yourself to the minute with TimeReporter 3.0.

"Pocket Doc provides a comprehensive solution for physicians who would like to experience the advantage of an electronic medical record."

- Dr. Mark Ebell, *The Journal of Family Practice*



FOR USE WITH
APPLE NEWTON™

PHYSIX

1-800-749-2585
pocketdoc@physix.com
1720 Dryden, Suite 205
4611 Montrose, Suite 230
Houston, TX 77030
FREE DEMO ON WWW PAGE

EASY

- No computer experience required
- Intuitive interface designed by a physician
- Designed for Outpatients, Inpatients and Multi-site use
- Portable and light, fits in a sports coat pocket

SAVES TIME

- Enter the History and Physical details during the encounter with a "tap" of the pen
- Code using the "Smart Browser," all it takes is 4 pen "taps" to reach the most specific billing code
- Transfer clinical notes to a desktop PC or Macintosh
- Fax or print notes/scripts directly from the Newton

SAVE MONEY

- Reduce/Eliminate dictation
- Speed encounter flow
- Reduce improper and non specific billing

IMPROVED PATIENT CARE

- Improve continuity of care with on-the-spot past medical data
- Care plans and health maintenance guidelines are listed and included in the note by simply tapping

Circle 34 on reader service card

Build Your Own Newton Application In 10 Minutes

APP Gen

Runs FAST on
all Newtons
1.0 & 2.0

Think of any data collection application you need, such as time & expense tracking. Use AppGen to build it with ease, just like filling out a multiple choice form. Exchange data with your favorite database or PIM application, or do it all on the Newton.

Sold At:
MacMall
The Newton
Store (Toronto)
PDA Direct

\$49.95

Phone: 508-548-4470 / 800-858-7956 Fax: 508-548-8731
email: pinehill@aol.com

Circle 35 on reader service card

integrated time and expense tracking, reporting, and billing application, you can keep track of your time and business expenses on the go. With links to Newton's Names, To-do, Calendar, and call entries, the package even includes a stopwatch so you can bill down to the minute.

TimeReporter 3.0: Iambic Software, 800/730-5370

Just for Fun

Ready for a break? Try these seriously fun applications for your portable pal: Gold Tee at Bighorn (around \$35), a golf game that you can play with up to four people (Apple Computer, 800/708-7827); MusicPad, a \$40 music-composition app that plays back your songs from the PDA speaker (Landware, 800/526-3977); and Pocket Chef, a \$100 mobile meal-planning tool that lets you create a grocery-shopping list by aisle (Forest Software, 970/923-3572).

Easter Egg Hunt



Tap your way to the mysterious and funny surprises hidden in Newton 2.0.

BY MARIE D'AMICO

Editor's note: *All work and no play makes anyone dull.* Apple's Newton team had fun working on the new operating system, even plugging in a few hidden surprises. Freelance writer Marie D'Amico prevailed on her husband, Apple Fellow and Chief Programmer Steve Capps, to show her where all the so-called Easter Eggs lie in Newton 2.0. An Easter Egg is a hidden sound or picture placed in code by a programmer with a wacky sense of humor. Here's D'Amico's list for some of the tastiest Eggs in Newton 2.0. Enjoy.



EGG FRECKLES Around the time that comic-strip artist Garry Trudeau made fun of the original Newton in Doonesbury, reporters often asked me, "how does your husband feel about his invention being ridiculed in Doonesbury?" To show what good sports we were, I wrote to Trudeau asking for an autographed

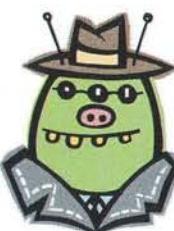
print of the complete strip for Capps's birthday. Trudeau sent me not only the signed strip but also an explanation of its creation. "I know a lot of people took my Newton strips to be a full-blown consumer review pan, but I was just writing about guys and their toys." He added, "The only thing I don't own is a Newton. I've never even laid eyes on one." To show what a good sport he was, Trudeau even drew a special Easter Egg for new 2.0. You can find Trudeau's Egg in 2.0 by writing "egg freckles" and tapping the "Assist" button.



GEOGRAPHY LESSON

Feel like going on a wild world tour? Fun cities on the Newton 2.0 world map (tap Extras, tap Time Zones) include "Titanic," "Newton-

more," and "Newton, Iowa," the home of Maytag.



THE X-FILES If you believe in UFOs, the Bermuda Triangle, and the X-Files, you'll love this one. Area 51, AKA Groom Lake, is a top-secret military installation that lies about 90 miles

north of Las Vegas, Nevada. Area 51 is where the government tests spy planes like the U-2 and the Stealth bomber (legend has it that Area 51 is also home to captured aliens from distant planets). Newton programmers placed their own Top Secret Area 51 Easter Egg in 2.0, to the displeasure of the CIA. And though Apple disavows any knowledge, you can find the Area 51 Easter Egg in Newton 2.0 by following these steps: Tap Extras, tap Unfiled Icons folder tab, choose

Storage, tap Time Zones, tap Delete, tap OK, tap Storage folder tab, choose Unfiled Icons, tap Time Zones, tap on map near Nevada, and Area 51, NV will appear in the list of cities. ET and UFO icons appear in the Calendar. (For more mysteries, check out the following Web site: http://www.cris.com/~psyspy/area51/desert_rat.)

CUCKOO NAMES If you want to go cuckoo, tap Dates, tap i, tap Prefs, tap in any corner without the X.

KNOCK THREE TIMES Write any of the following three times and you'll get a surprise: larryy, Brandyn, lesv, stafford, lyon.

SHADE YOUR EYES Power up Newton 2.0 on the day of a solar or lunar eclipse. Instead of the Newton light bulb icon, you'll see an eclipse you can view without sunglasses. ■

Want to share your calendar and contacts with your Newton®? Now Synchronize™ makes it happen!

Now Synchronize provides true two-way synchronization between Now Up-to-Date & Contact and a Newton device, making it the best portable solution for Macintosh® and Newton users!

Works with the new 2.0 Newton OS, as well as version 1.3.

Call 1-800-237-2078 and get synchronized today for only \$29.95!

Now Software
It's about time.™

Circle 31 on reader service card

Consumer Advocate

by Howard Baldwin

Divining the Difference between Performas and Power Macs

SUBTLE CHOICES MEAN CAREFUL DECISION-MAKING

IF YOU'RE CONFUSED ABOUT the difference between a Performa and a Power Macintosh—and the letters we receive indicate that you are—simply think of them as the descendants of the Apple II and the Lisa, respectively. Apple Computer has always believed that its home machines (Performas) don't go into offices, and its office machines (Power Macintoshes) don't go into homes. In fact, according to Apple, 97 percent of Performas go straight home from the store.

But which one should you buy? They both run System 7.5 operating system software. Both come with RISC processors, and soon both will offer PCI slots. Except for the Performa 5000 series, which is an integrated one-piece box, you can upgrade the monitors of both. You can also upgrade the motherboards of both to take advantage of processor improvement.

Wait, now we're confused too. Let's go through the pros and cons of each and get this straightened out.

Performa Pros and Cons

The man who's in charge of Apple's entry Macintosh product line, Bruce Gee, calls the Performa the "Club Med of computers." Just like the vacation destinations where food and fun are included, on a Performa the software applications you need to get started are already installed. You'll find Claris's ClarisWorks integrated-office package, Apple's At Ease security software, Intuit's Quicken check-writing software, Datawatch's Virex antivirus software, and ten other applications, along with nine CDs. The modem's built in, so you can plug in the phone jack and start your online surfing. It's the cheapest desktop RISC processor you'll find.

Sound great? Sure it does. You've saved the cost of the monitor (about \$500) and the software (about \$1500). There are just a couple of problems. If you ever want a

bigger monitor, you can go ahead and buy one—but unless you donate your old one to a local charity or school, that monitor is probably going to gather dust because you won't find much use or market for it. The software you get? Well, the \$1500 figure refers to the suggested retail price of the software, but as we all know, nobody buys anything at the SRP. What's more, you may not even get the latest versions. The fact is, the computer you buy today may have been manufactured before an included software application was upgraded—you'll have to shell out more money if you want the latest version.

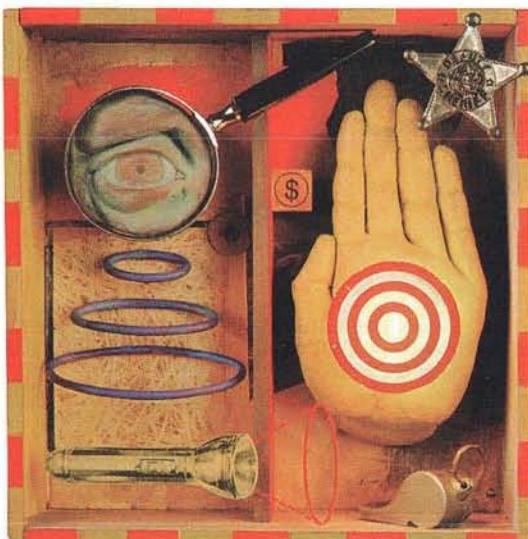
SIMMs, and the Performas have only two SIMM slots. That means jettisoning the 8MB or 16MB SIMM (although some stores will buy them back). Gee's recommendation either when you buy your Performa or when you upgrade: buy one 32MB SIMM and go with 40MB of RAM total. Unfortunately, this costs about \$1600 (almost as much as the Performa itself), excluding installation, which is another \$50 to \$75.

On other upgradability fronts, there's mixed news. Performa hard drives range from 500MB to 1GB in the standard IDE format common in PCs, so you

can increase disk capacity easily. But over the next year, IDE will be superseded by a standard called Enhanced IDE. It's unclear what you will need to upgrade today's Performas to accommodate an internal E-IDE drive (PCs need an upgraded BIOS), but you can always add external SCSI storage. You can buy your Performa with either a 14.4-Kbps or 28.8-Kbps internal modem, and for Web browsing you really need the latter. It isn't yet possible to swap the modem for a faster version—you'll have to use an external modem. You can add video and communications cards, but these are Performa-specific and cost between \$100 and \$200.

Power Mac Positives and Negatives

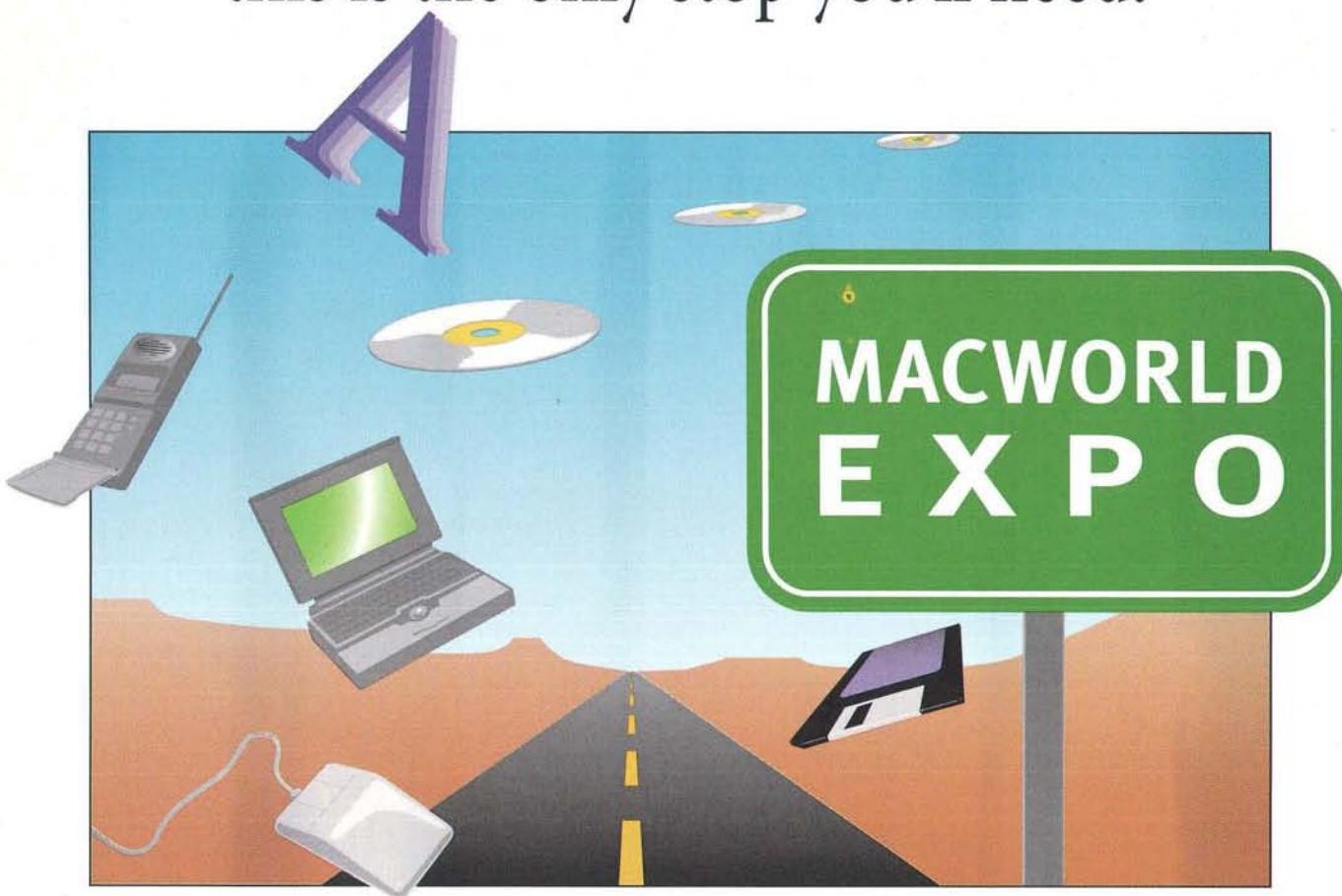
This brings us to the Power Macs. The first thing you'll notice is the price tag—Apple's suggested price for Performas starts at around \$1400, while Power Macs start at around \$1500 for a 7200/75 (the two lines overlap in the \$1549 to \$2800 price range). Extending Apple's travel analogy, the Power Mac is for people who like to plan their own itinerary—like *continues*



And once you've upgraded to the new version, since newer software is generally bigger, not smaller, you may soon find the computer choking on the 8MB or 16MB of RAM that ships with the Performa. System 7.5 takes 5MB of RAM. ClarisWorks may take only 3MB of RAM to run, but if you upgrade to Microsoft Word 6.0 (6MB of RAM) and Microsoft Excel 5.0 (10MB), you'll have to upgrade your RAM as well to run two similarly memory-heavy programs. You can expand the Performas to 64MB of RAM, but to do so requires two 32MB

Forget Gas, Food & Lodging

On the Information Superhighway
this is the only stop you'll need.



Don't want to be bypassed on the Information Superhighway? Then plan a detour to MACWORLD Expo. Here you'll test drive the products and services that enable you to maximize the potential of the Macintosh now and down the road.

MACWORLD Expo is your chance to see hundreds of companies presenting the latest in turbo-charged Macintosh technology. Make side by side comparisons of thousands of Macintosh products. Learn from the experts how to fine-tune your system and what products will keep your engine running smooth. Attend a variety of information-packed conference programs that provide the skills and knowledge to put you in the driver's seat. So pull on in and take that new Mac for a spin.

Add a stop at any of our upcoming MACWORLD Expo events to your information roadmap. With shows in San Francisco and Boston, we're just around the next bend.

Please send me more information on MACWORLD Expo.

I am interested in: Exhibiting Attending

San Francisco Boston

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

Mail to: MHA Event Management, 1400 Providence Highway,
Norwood, MA 02062 Or Fax to: 617-440-0300

MW

backpackers headed to Nepal with a stopover in Vietnam. Power Macintoshes come in 17 versions, and you can mix and match hard drives, monitors, and RAM to configure whatever you want. With the 9500 towers, you can even add new internal disk drives, rather than adding to the chain of SCSI storage devices. Want to network? Ethernet ports are built into Power Macs—not so with the Performas.

But without software built in, you're looking at an additional cost for applications (unless you go to a retailer who will throw in some application disks). At \$425 for Microsoft Office, \$90 for Claris FileMaker Pro, a couple of utilities at \$80 each, and \$40 each for some CDs, you've paid half again as much as the Power Mac for software. And Power Mac buyers aren't immune to RAM choking either. Power Macs may come with 16MB, but you'll need to add at least 8MB, and maybe even 16MB, for a basic office computer. Anybody using Adobe Photoshop needs at least 40MB. There's another \$1200.

The Last Word

The answer to the Performa versus Power Mac question isn't clear-cut. To the question, "What should I buy?" we in technology usually respond, "What are you going to use it for?" But there's another important angle—what are you going to use it for in three years? In most technology purchases, whether corporate or personal, there's a tendency to ponder the neat stuff you can do that you hadn't thought of before.

As a result, no matter what computer you buy, in three years it may not have the

THE AMCOEX INDEX OF USED MACINTOSH PRICES

Machine (RAM/Hard Drive)	Average Sale Price	Monthly Change
PowerBook 140 (4MB/40MB)	\$625	+\$25
PowerBook 165 (4MB/80MB)	\$900	\$0
PowerBook 180 (4MB/80MB)	\$1250	\$0
PowerBook Duo 230 (4MB/80MB)	\$750	-\$50
Mac IIci (5MB/40MB)	\$225	\$0
Mac IIci (4MB/80MB)	\$400	+\$50
Mac IIfx (4MB/80MB)	\$375	\$25
Centris 650 (8MB/230MB)	\$875	-\$75
Qudra 800 (8MB/230MB)	\$1125	\$0
Qudra 900 (8MB/160MB)	\$975	-\$125
Power Mac 7100/66 (8MB/350MB)	\$1475	+\$25
Power Mac 8100AV (8MB/500MB)	\$2175	-\$75

Index provided by the American Computer Exchange of Atlanta (800/786-0717). It reflects sales during the week of January 5, 1996. Configurations include keyboard and exclude monitor and display board for noncompact models.

processor power, the CD-ROM speed, or the hard drive capacity to run the latest and greatest applications. And even if you can upgrade it, the cost may set you back as much as a new computer would—whether Performa or Power Mac.

So are you willing to bite the bullet and buy a new computer in three years (or sooner)? Is there someone in the family or the company to whom you can pass the old one? If so, great. But if you're one of those rare and lucky souls who are confident that their computing needs will remain constant long past the turn of the century, then open up the all-in-one Performa box. Until technology stabilizes, the rest of us should stick with the power and flexibility that the Power Mac promises.

Whatever Happened to . . . ?

Missing in Action In November 1995, I had trouble with my Spirit Technologies hard drive. After getting a return-merchandise authorization number from the company's tech-support department, I sent the drive to Spirit via Federal Express. Yesterday, my hard drive was returned unopened with a form letter that states, "Spirit Technologies will no longer be in a position to assist you in repair of hardware products."

Since then, I've E-mailed, faxed, and left bunches of voice messages, but I've gotten no response of any kind. Do you know if the company is going out of business?

DAVID M. PECK, S.R.
Rosemount, Minnesota

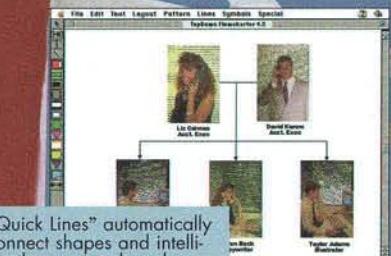
continues

NEW VERSION

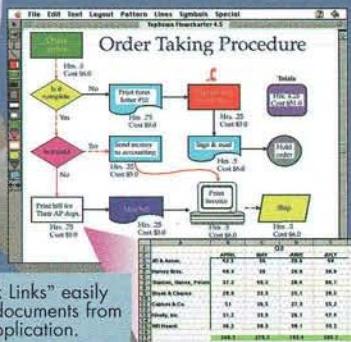
The ALL IN 1 Charting Tool



"Quick Shapes" instantly enlarge to fit text and open to show more details.



"Quick Lines" automatically connect shapes and intelligently reroute when shapes are moved.



"Quick Links" easily open documents from any application.

TopDown® 4.5
"The Smarter Charter™"



"TopDown will take you places other flowcharters can't go."
-InfoWorld

WINDOWS VERSION AVAILABLE

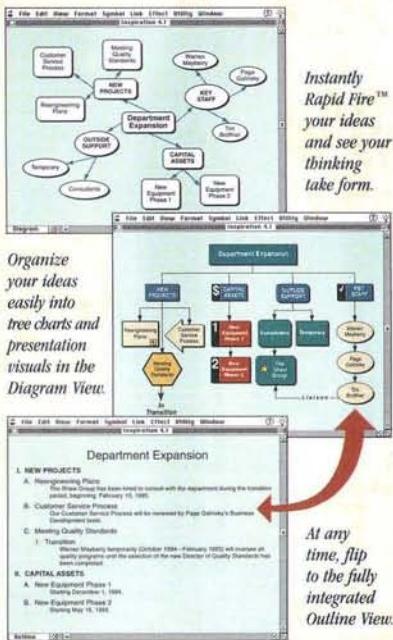
CALL (800) 938-8900
FOR YOUR FREE INFO KIT

KAETRON
Software Corp.

Circle 67 on reader service card

Instantly Visualize Concepts

Getting clear and focused right at the start of a project is often the most difficult part. The next time you begin to develop an idea or plan, use Inspiration®—the real-time idea development tool for quickly clarifying and organizing your thoughts.



Call (800)877-4292
to request your

FREE IDEA BOOKLETS

Instant Idea Clarification - Quality Diagrams & Process Flows
Effective Idea Meetings - Quick Presentation Visuals

Inspiration®

The Real-Time Idea Development Tool

Inspiration Software®, Inc.
503.297.3004 Tel. • 503.297.4676 Fax
Web Site <http://www.inspiration.com>

©1995 Inspiration Software®, Inc.

CONSUMER ADVOCATE

Bugs and Turkeys



Softkey's (800/227-5609) American Heritage Dictionary 3.0 crashes if installed on a Mac with more than 16MB of RAM. To fix, upgrade to 3.6.1—ask for the special "memory issue" price of \$12.95; otherwise, it's \$29.95.



Unlike the PC version of Netscape Navigator 2.0, the Mac version does not support Java, and won't until version 2.1. Netscape Communications (415/528-2555, info@netscape.com) says it has had a hard time finding experienced Mac programmers.

Macworld will send you a Bug Report or Turkey Shoot T-shirt if you are the first to inform us of a turkey or a serious, reproducible bug that we report in this column. See How to Contact Macworld.

umn of September 1994 offered suggestions for dealing with companies that are no longer in business. If you use a credit card to pay for merchandise you never received, dispute the charges with the credit card company. And stay abreast of the latest news—if a company actually files for bankruptcy, file a claim as soon as possible with the bankruptcy court in the area in which the company is located (the court clerk's office can send the form). Filing a claim doesn't guarantee you will be reimbursed any money the company owes you, but at least you will be in line with the other creditors.

When Macworld went to press, the Massachusetts Bankruptcy Court (617/565-8950) had no listing for Spirit Technologies.

—SUZANNE COURTEAU

When Macworld senior editor HOWARD BALDWIN asked his niece, a Performa owner, what she wanted for her birthday, she replied, "More RAM."

Not getting the treatment you deserve? Or have you received heroic service? Write to the Consumer Advocate department at Macworld, 501 Second St., San Francisco, CA 94107, or send us a fax at 415/442-0766. ■

Service HERO

Contributing editor David Pogue's lousy Friday got worse when his PowerBook Duo fell off the table and struck the floor. Parts and components sprayed everywhere: a battery here, a trackball there, a back-panel flap over by the sink.

In a panic, he put the parts into a sandwich bag and took them, with the dismembered laptop, to Tekserve (212/929-3645), a New York City Mac-service and -repair shop. The technician, barely concealing his amusement at the sight of the sandwich bag, reseated each component, wiggled the case back into alignment, tightened the screw, and handed the whole thing back to Pogue.

"There you go. No charge," he said.

"Wow," said David, "don't I owe you something?"

"Look, if I brought you a broken radio, and all it needed was for you to bend the antenna back into alignment, would you charge me?"

"I guess not," Pogue said.

Star Ratings

HARDWARE AND SOFTWARE PRODUCTS AT A GLANCE

Macworld Star Ratings lets you compare Macintosh products based on the authoritative assessments in our reviews and features. The number of stars indicates the product's level of quality; each product also gets a numeric score that provides a more exact assessment of the product's quality within that level. We evaluate seven factors to derive the Star Rating: feature set, design implementation, performance, reliability, ease of use, innovation, and value. We take these evaluations, weight their importance for each class of product, and calculate the final score. The higher the score, the better a product is, even among products with the same number of stars. The following list shows how the ratings and scores relate.

★★★★★	9.0 to 10.0	Outstanding
★★★★	7.0 to 8.9	Very Good
★★★	5.0 to 6.9	Good
★★	3.0 to 4.9	Flawed
★	0.0 to 2.9	Unacceptable

This section also lists products that have been awarded an **Editors' Choice** designation in a *Macworld* product comparison.

If a product has been upgraded since our last assessment, the most recent version number appears in parentheses after the main reviewed version number. To read a full review of any product in the listing, please consult the issue indicated at the end of the listing or search for the product via *Macworld Online* (keyword *Macworld* on America Online; URL <http://www.macworld.com> on the World Wide Web).

Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

software

BUSINESS TOOLS

★★★★/8.8 **4th Dimension 3.5**, ACI US, 408/252-4444, \$895. Leading Mac database gets important improvements. *Mar 96*, p. 60

★★ **Adobe Acrobat 2.0 (2.1)**, Adobe Systems, 415/961-4400, \$195. The font fidelity of this portable-document software is uneven. *Mar 95*, p. 59

★★★ **Adobe Acrobat for Workgroups 2.0 (2.1)**, Adobe Systems, 415/961-4400, \$1595. Portable-document software for workgroups is inexpensive but resource-intensive. *Mar 95*, p. 59

★★★★ **ArcView 2.1**, Environmental Systems Research Institute, 909/793-2853, ext. 2050, \$995. Sophisticated GIS program is easy to customize.

Jan 96, p. 55

★★★★ **BizPlan Builder 5.0**, Jian, 415/254-5600, \$129. Easy-to-use spreadsheet/word processor template creates business plans. *Jun 95*, p. 61

★★ **Business Plan Writer 6.0**, Graphite Software, 301/984-1100, \$99. Proposal-writing template helps you create a detailed business plan. *Jun 95*, p. 61

★★★★★/9.7 **Data Desk 5.0**, Data Description, 607/257-1000, \$625. Classic statistics program adds dazzling new features. *Mar 96*, p. 79

★★★★ **DeltaGraph Pro 3.5**, DeltaPoint, 408/648-4000, \$195. Easy-to-use graphing software stands out from the pack. *Jan 96*, p. 57

★★★ **Equate 1.0**, Holosoft, 408/748-9648, \$99. Newton spreadsheet is compatible with Excel. *Oct 95*, p. 85

★★★★ **Helix Express 3.03**, Helix Technologies, 708/465-0242, \$589. Latest release of visually oriented database adds speed and features. *Sep 95*, p. 65

★★★★ **MapInfo 3.0**, MapInfo, 518/285-6000, \$1295. Mapping software includes advanced geographic-analysis and geocoding tools. *Oct 95*, p. 66

★★★ **Meeting Maker XP 3.1**, On Technology, 617/374-1400, \$249; \$890 for 10 users. Group scheduling program is useful for small and midsize businesses. *Jan 96*, p. 69

★★★★ **Microsoft Excel 5.0**, Microsoft, 206/882-8080, \$339. A wealth of powerful features but huge hardware requirements. *Jan 95*, p. 54

★★★★ **Microsoft FoxPro for Macintosh 2.5 (2.6)**, Microsoft, 206/882-8080, \$495. The relational database offers fast searching but an uneven interface for users. *Apr 94*, p. 56

★★★ **PhoneDisc 95 PowerFinder**, Digital Directory Assistance, 617/639-2900, \$249. CD-ROM-based phone directory is convenient, but must be updated periodically. *Oct 95*, p. 91

★★★ **Phyla 1.0.3**, Mainstay, 805/484-9400, \$495. While nonprogrammers can learn to use this object-oriented database, a little SmallTalk or C++ programming background wouldn't hurt. *Aug 95*

★★★ **QuickFigure Pro 2.1**, PelicanWare, 503/221-1148, \$49.95. Newton spreadsheet includes charting and linear equation solving. *Oct 95*, p. 85

COMMUNICATIONS/NETWORKS

★★★★ **Apple Mobile Message System**, Apple Computer, 408/996-1010, \$549; \$19.95 per month. Multifaceted remote-messaging service helps you keep in touch. *Sep 95*, p. 74

★★★★ **ASAP 1.5**, MicroBeam, 813/546-2727, \$695; \$795 with Windows client program. Convenient utility makes file-transfer operations quick and easy. *Sep 95*, p. 72

★★★ **Claris Emailler 1.0**, Claris, 408/727-8227, \$89. E-mail-management program offers impressive features at a good price. *Dec 95*, p. 62

★★★/4.6 **COPSTalk for Windows 1.2f**, CoOperative Printing Solutions, 770/840-0810, \$179 per user. Windows 95-compatible software gives PCs AppleTalk capability. *Mar 96*, p. 67

★★★ **CreativePartner**, emotion Inc., 415/812-9000, \$1500. Collaboration tool distributes video, sound, text, and graphics over a network. *Jul 95*, p. 69

★★★/4.9 **CyberFinder 2.0**, Aladdin Systems, 408/761-6200, \$30. Software uses the Finder to track Internet URLs. *Mar 95*, p. 82

★★★★ **FileWave 2.1.2**, Wave Research, 510/704-3900, \$895. Update LAN users with this easy-to-use software-distribution tool. *Jul 95*, p. 63

★★★ **GrabNet 1.0**, ForeFront Group, 713/961-1101, \$19.95. Simple, affordable utility captures Web pages. *Nov 95*, p. 85

★★★ **HoloGate 1.0**, Information Access Technologies, 510/704-0160, \$500. E-mail gateway is price-rich and feature-poor. *Apr 95*, p. 71

★★★★ **MacAdministrator**, Hi Resolution, 508/463-6956, \$395 (10-user pack). Group administration tool is a great helper for network administrators. *Dec 95*, p. 75

★★★★ **Netscape Navigator**, Netscape Communications, 415/528-2555, \$39. Web browser is ahead of the pack in terms of features and ease of use. *May 95*, p. 69. **Editors' Choice** for best Internet browser. *Oct 95*, p. 110

★★★★ **NetWorks 3.0.4**, Caravelle Networks, 613/225-1172, \$1395 to \$2495. Network-monitoring utility is an indispensable tool. *Apr 95*, p. 85

★★★/6.9 **PageMill 1.0**, Adobe Systems, 415/961-4400, \$149. Drag-and-drop Web publishing software masks HTML complexities. *Mar 96*, p. 56

★★★★/8.8 **PageNow 1.5**, Mark/Space Softworks, 408/293-7299, \$119. Alphanumeric paging software gets the message across. *Mar 96*, p. 70

★★★★/5.8 **Personal MacLAN Connect 5.5.1**, Miramar Systems, 805/966-2432, \$199 per user. Windows 95-compatible software lets PC and Mac users communicate via AppleTalk. *Mar 96*, p. 67

★★★★ **ProTerm Mac 1.0**, InTec Software, 602/992-5515, \$129.95. Communications program is fast, reliable, and stable. *Jul 95*, p. 71

★★★ **QuickMail 3.0 (3.5)**, CE Software, 515/221-continues

Star Ratings

1801, \$199 to \$3799. Good choice for most people, although rule-based features are incomplete. *Jan 95*, p. 59

★★★ **Saber LAN Workstation**, Saber Software, 214/361-8086, \$199 plus \$49 per node. LAN-management package is a useful tool for the price. *Aug 95*, p. 73

★★★★ **Skyline/Satellite**, AG Group, 510/937-7900, 1-station pack \$795; 5-station pack \$1195; 10-station pack \$1995. Remote monitoring engines keep an eye on LAN traffic. *Sep 95*, p. 74

★★★★ **SnapMail 2**, Casady & Greene, 408/484-9228, \$250 (5 users); \$420 (10 users); \$1940 (50 users). E-mail software is easy to install, but its gateway interface is kludgy. *Dec 95*, p. 75

★★★★ **Snatcher 1.0**, Software Ventures, 510/644-3232, \$49.95. Simple, efficient FTP tool lets you connect to multiple sites simultaneously. *Aug 95*, p. 81

★★★ **TurboTalk 1.0**, Information Presentation Technologies, 805/541-3000, \$160 to \$495. Network utility's performance is unimpressive on some network configurations. *Oct 95*, p. 83

DESKTOP PUBLISHING

★★★★ **Adobe PageMaker 6.0**, Adobe Systems, 206/622-5500, \$895. Page-layout program's upgrade includes practical and powerful improvements. *Nov 95*, p. 60

★★★ **ColorDrive 1.0**, Pantone, 201/935-5500, \$199. Color-management software supports a broad range of color models. *Nov 95*, p. 70

★★★★ **FrameMaker 5.0**, Adobe Systems, 408/975-6000, \$895. Page-layout program is a good choice for technical-document creation. *Nov 95*, p. 63

★ **HotMetal Pro 2.0**, SoftQuad, 416/239-4801, \$195. Web authoring software is hampered by a poorly designed interface. *Jan 96*, p. 65

★★★★ **Icefields 2.3**, The Color Partnership, 619/259-8688, \$895. Professional printers will appreciate this stochastic-screening software. *Nov 95*, p. 75

★★★★ **QuarkXPress 3.2 (3.31)**, Quark, 303/894-8888, \$895 (\$995 for Power Macintosh). A must-have layout tool for color publishers. *Nov 95*, p. 51

★★★★ **theTypeBook 4.0**, Rascal Software, 805/255-6823, \$59.95. Customizable type-specimen generator is a worthwhile purchase. *Jun 95*, p. 73

EDUCATION/ENTERTAINMENT

★★★★ **3D Atlas 1.1**, EA World, 415/571-7171, \$79.95. Well-designed atlas enriches map data with narration, photos, and movies. *May 95*, p. 73

★★★ **AmoebArena 1.0**, Casady & Greene, 408/484-9228, \$49.95. Engaging strategy game pits amoeboid against amoeboid. *Jan 96*, p. 75

★★★ **CyberBoogie**, Times Mirror Multimedia, 314/531-2503, \$49.95. Cute animation software is a good choice for very young kids. *Apr 95*, p. 89

★★★★ **The Daedalus Encounter**, Virgin Interactive Entertainment, 714/833-8710, \$59.95. Escape from a doomed spacecraft in this interactive adventure. *Sep 95*, p. 73

★★★★ **Digital Chisel 1.2**, Pierian Spring Software, 503/222-2044, \$199.95, site license \$995. Authoring tool creates good interactive quizzes but suffers

from a nonstandard interface. *Jun 95*, p. 71

★★★★ **FrenchNow 3.0**, Transparent Language, 603/465-2230, \$99 to \$129. While it doesn't replace a class, software can help you learn French. *Dec 95*, p. 83

★★★★ **Full Throttle**, LucasArts, 415/472-3400, \$49.95. Biker adventure game is witty and action-packed. *Jan 96*, p. 73

★★★ **Haight-Ashbury in the Sixties**, Compton's NewMedia, 619/939-2500, \$49.95. If you can remember the sixties, you probably don't need this CD-ROM. *Dec 95*, p. 84

★★★★ **King's Quest VII: The Princeless Bride**, Sierra Online, 206/649-9800, \$59.95. Adventure game is entertaining, but adults might find its plot silly. *Jan 96*, p. 75

★★★★ **The Legend of Kyrandia, Book 3**, Virgin Interactive Entertainment, 714/833-1999, \$34.95. Enjoyable adventure game features good graphics and sound. *Jan 96*, p. 77

★★★★ **Links Pro CD**, Access Software, 801/359-2900, \$69.95. An excellent simulation of golf's many challenges. *Jan 96*, p. 73

★★★★ **The Lost Mind of Dr. Brain**, Sierra Online, 206/649-9800, \$44.95. Hilarious brainteasers are presented in an imaginative, arcade style. *Oct 95*, p. 93

★★★★/8.5 **Marathon 2: Durandal**, Bungie Software Products, 312/563-6200, \$79. A well-crafted action-adventure game, but it's not for the squeamish or those disturbed by violence. *Mar 96*, p. 85

★★★★ **Material World**, StarPress Multimedia, 415/274-8383, \$59.95. Multimedia CD-ROM provides a fascinating look at diverse cultures. *Jun 95*, p. 83

★★★★ **Math Workshop**, Brøderbund Software, 415/382-4700, \$40. Youngsters can have some fun while learning math. *Aug 95*, p. 89

★★★ **Merriam-Webster's Collegiate Dictionary on CD-ROM**, Merriam-Webster, 413/734-3134, \$69.95. Powerful search capabilities don't make up for this dictionary's interface flaws. *Nov 95*, p. 79

★★★★ **Nile: Passage to Egypt**, Discovery Channel Multimedia, 301/986-1999, \$49.95. Armchair adventurers will enjoy this multimedia journey on CD-ROM. *Oct 95*, p. 93

★★★ **Out of the Sun**, Domark software, 415/513-8929, \$44.95. Flight-simulation game presents historic or custom battle scenarios. *Jan 96*, p. 77

★★★★★ **Passage to Vietnam**, Against All Odds Productions/Interval, 800/558-3388, dept. 100, \$39.95 to \$59.95. Stunning photojournalism CD-ROM sets a new standard for multimedia projects. *Dec 95*, p. 83

★★★ **Small Blue Planet 2.0 (2.0.1)**, Now What? Software, 415/885-1689, \$59.95. The satellite photos of this atlas are truly dazzling, although the interface is less than world class. *May 95*, p. 73

★★★★ **Storybook Weaver Deluxe 1.0**, MECC, 612/569-1500, \$69.95. Well-designed program lets kids create their own storybooks. *May 95*, p. 83

★★★★ **Theorist 2.0**, Waterloo Maple Software, 519/747-2373, \$299. Symbolic-math program is a great learning aid for students. *Jun 95*, p. 79

★★★★ **Widget Workshop**, Maxis Software, 510/254-9700, \$44.95. Clever mad scientist's laboratory encourages imagination and exploration. *Apr 95*, p. 89

★★★★/8.9 **You Don't Know Jack**, Berkeley Systems, 510/540-5535, \$30. "Jeopardy!" with a bad attitude. *Mar 96*, p. 85

FINANCE/ACCOUNTING

★★★★ **Managing Your Money 7.0**, MECA Software, 203/255-1441, \$79.95. Personal financial software includes advanced investment features. *Oct 95*, p. 81

★★★★ **M.Y.O.B. 5.0**, BestWare, 201/586-2200, \$139 (\$239 with payroll). Well-designed interface makes double-entry accounting easy. *May 95*, p. 63

★★★★ **QuickBooks 3.0**, Intuit, 415/322-0573, \$119. Double-entry accounting program is easy to use but not entirely Mac-like. *Jun 95*, p. 58

★★★★/8.3 **Quicken Deluxe 6**, Intuit, 520/295-3220, \$59.99. The best-selling package gets bigger and mostly better. *Feb 96*, p. 65

GRAPHICS

★★★★ **AddDepth 2.0**, Ray Dream, 415/960-0768, \$99. Three-dimensional effects software provides a simple way to give depth to illustrations. *Nov 95*, p. 81

★★★★/8.4 **Adobe After Effects 3.0**, Adobe Systems, 415/961-4400, \$995 base version; \$1995 Production Bundle. Must-have video-design package enhances motion control and adds effects. *Mar 96*, p. 54

★★★★ **Adobe Dimensions 2.0**, Adobe Systems, 415/961-4400, \$199. 3-D effects software has added color support plus drawing and text tools. *Apr 95*, p. 71

★★★★ **Adobe Photoshop 3.0 (3.0.4)**, Adobe Systems, 415/961-4400, \$895. Broader capabilities combine with simplified work environment. *Jan 95*, p. 52. **Editors' Choice** for best image editor. *Feb 95*, p. 112

★★★★/7.4 **Adobe Premiere 4.2**, Adobe Systems, 415/961-4400, \$795. Video editor offers significant enhancements, including CD-ROM Movie Maker plug-in. *Mar 96*, p. 90

★★★★ **Adobe TextureMaker 1.0 (2.0)**, Adobe Systems, 415/961-4400, \$199. Texture generator creates backgrounds for multimedia or printed projects. *Oct 95*, p. 89

★★★★ **Alien Skin Textureshop 1.0**, Virtus, 919/467-9700, \$99. Apply random mutations to master textures to create custom patterns. *Jul 95*, p. 81

★★★★ **Black Box 2.0**, Alien Skin Software, 919/832-4124, \$119. Photoshop image filters are useful and worth their modest price. *Nov 95*, p. 87

★★★★/6.9 **Boris Effects 1.01**, Artel Software, 617/566-0870, Premiere version \$350; Media 100 version \$695. Plug-in for Premiere and Media 100 adds video-effects control. *Feb 96*, p. 85

★★★★ **Canvas 3.5 (3.5.2)**, Deneba Software, 305/596-5644, \$399. Lots of features but confusing interface. *Jan 94*, p. 49

★★★★ **CD-Q 2.0**, Human Software Company, 408/741-5101, \$145. Photoshop plug-in facilitates color corrections and separations on Photo CDs. *Jul 95*, p. 65

★/1.5 **Chagall 2.0.2**, Technosystems USA, 502/351-0108, \$299. Image-editing application flunks test. *Feb 96*, p. 78

★★★★/8.0 **Claris Impact 2.0**, Claris, 408/987-7000, \$99. Easy and affordable business-graphics software. *Feb 96*, p. 66

★★★★ **Color It 3.0**, MicroFrontier, 515/270-8109, \$149.95. Venerable paint program has been updated with powerful new features. *Aug 95*, p. 75

★★★★ **Colorize 2.0**, DS Design, 919/319-1770, \$495. Colorizing software is effective, but expensive for

- a one-trick pony. *Dec 95*, p. 81
- ★★★★/7.5 Dabbler 2**, Fractal Design, 408/688-5300, \$69. Drawing package offers an easy, affordable natural-painting option. *Mar 96*, p. 63
- ★★★★/7.3 DrawTools 1.0**, Extensis, 503/274-2020, \$149. Extensions add color, shape, and object tools to FreeHand and Illustrator. *Feb 96*, p. 71
- ★★/4.5 Envelopes 1.0**, Letraset USA, 800/343-8973, \$99. Distorts objects but inserts extraneous anchor points as well. *Mar 96*, p. 106
- ★★ FloorPlan Plus 1.1**, ComputerEasy International, 602/829-9614, \$49.95. Affordable 2-D CAD program is intended for rudimentary design tasks. *Sep 95*, p. 85
- ★★★ FullPixelSearch 1.5**, Avian Systems, 201/224-2025, \$1295. Analyze scientific images with a variety of pixel-selection functions. *Jul 95*, p. 79
- ★★★ Gryphon Batch It 1.0**, Gryphon Software, 619/536-8815, \$199. Although it lacks conditional statements, batch processor is a time-saver. *Jun 95*, p. 67
- ★★★★ Infini-D 3.0**, Specular International, 413/253-3100, \$899. 3-D software does professional-quality rendering and animation. *Jan 96*, p. 54
- ★★/3.3 Infinite FX 1.0**, BelInfinite, 404/552-6624, \$149. Many automated reshaping effects, mired by poor organization. *Mar 96*, p. 106
- ★★★ IntelliHance 1.0**, DPA Software, 214/517-6876, \$129 to \$299. Photoshop plug-in automates the process of improving scanned graphics. *Sep 95*, p. 71
- ★★★★/8.3 Kai's Power Tools 3.0**, MetaTools, 805/566-6200, \$199. More-powerful plug-ins, more-baffling interface. *Feb 96*, p. 57
- ★★★★ KPT Convolver 1.0**, MetaTools, 805/566-6200, \$199. Imaginative and absorbing plug-in module creates Photoshop filters. *Aug 95*, p. 71
- ★★★★/8.5 KPT Vector Effects 1.0**, MetaTools, 805/566-6200, \$199. Combines excellent experimentation functions with thoughtful interface design. *Mar 96*, p. 106. **Editors' Choice** for best natural-draw program.
- ★★★★/6.2 LightningDraw GX 1.0**, Lari Software, 919/968-0701, \$299. Lets you combine colors and shapes and experiment with QuickDraw GX fonts. *Mar 96*, p. 106
- ★★★★ Live Picture 2.0**, HSC Software, 805/566-6200, \$995. Latest version of this innovative image editor boasts many improvements. *Sep 95*, p. 62
- ★★★★ MacPhase 2.0**, The Otter Solution, 315/768-3956, \$279. Feature-rich program offers scientific and graphics image processing tools. *Aug 95*, p. 85
- ★★★★/8.1 Macromedia FreeHand 5.5**, Macromedia, 415/252-2000, \$595. Draw program outperforms competitor, for now. *Feb 96*, p. 74
- ★★★★/8.1 MiniCad 6**, Graphsoft, 410/290-5114, \$795. Nothing's small about this modular package. *Mar 96*, p. 65
- ★★★ MovieFlo' 1.1**, The Valis Group, 415/435-5404, \$899. Tug, twist, and pinch images with this special-effects program. *Jun 95*, p. 60
- ★★★★ Paint Alchemy 2.0**, Xaos Tools, 415/487-7000, \$199. Flexible image editor is an appealing add-on for digital artists. *Sep 95*, p. 70
- ★★★★★/9.4 Painter 4**, Fractal Design, 408/688-5300, \$549. Near-perfect painting program just got even better. *Mar 96*, p. 58
- ★★★★ PhotoEnhancer 1.0**, PictureWorks, 510/855-2001, \$129. Nifty utility improves the quality of QuickTake photos. *Apr 95*, p. 65
- ★★★★ PhotoFix 2.8.8**, Microspot USA, 408/253-2000, \$249. Image-editing/photo-enhancement program is a useful tool. *Sep 95*, p. 81
- ★★★★ PhotoFlash 2.0**, Apple Computer, 408/996-1010, \$129. Image-editing utility provides basic image-retouching tools at a reasonable price. *Jul 95*, p. 67
- ★★ PhotoFusion 2.0.3**, Ultimate, 818/993-8007, \$695. Photoshop compositing plug-in is hampered by a poor interface. *Oct 95*, p. 83
- ★★★★ PixelPutty Solo (1.5)**, The Valis Group, 415/435-5404, \$399. Affordable modeler lets you manipulate 3-D objects as if they were clay. *Jun 95*, p. 77
- ★★★★ Poser 1.0**, Fractal Design, 408/668-5300, \$199. 3-D illustration tool generates posable human figures. *Oct 95*, p. 63
- ★★★★★ PowerCADD 2.0**, Engineered Software, 910/299-4843, \$795. CAD program features exceptional speed and an extensive array of tools. *Oct 95*, p. 77
- ★★★★★/7.2 QX-Tools 1.0**, Extensis, 503/274-2020, \$149. Ten XTensions that make QuarkXPress more powerful. *Feb 96*, p. 73
- ★★★★ Ray Dream Designer 3.1.1**, Ray Dream, 415/960-0768, \$349. 3-D graphics program provides competent modeling tools and excellent rendering. *Mar 95*, p. 61
- ★★ Select 1.6**, Human Software, 408/741-5101, \$245. CMYK color-correction plug-in duplicates many Photoshop functions. *Jul 95*, p. 81
- ★★★★★/8.7 SmartSketch 1.0**, FutureWave Software, 619/637-6190, \$69.95. Makes drawing and editing paths as easy as painting. *Mar 96*, p. 106. **Editors' Choice** for best natural-draw programs.
- ★★★★/5.0 Tracer 1.0**, ScanVec, 508/694-9488, \$795. Excellent but expensive autotracing. *Feb 96*, p. 85
- ★★★★★ Transverter Pro 3.0**, TechPool Studios, 216/382-1234, \$395. Graphics-conversion tool deserves a place in every desktop publisher's toolbox. *Nov 95*, p. 77
- ★★★★★/8.7 upFront 2.0.1**, SketchTech, 612/379-1435, \$299. A new vendor—SketchTech—improves Alias's venerable entry-level 3-D modeling package. *Mar 96*, p. 86
- ★★★★ Virtus WalkThrough Pro 2.0**, Virtus, 919/467-9700, \$495. Aside from occasional stumbles, this 3-D design tool is an exceptional program. *Apr 95*, p. 59
- ★★★★ Vision 3d 4.0**, Strata, 801/628-5218, \$695. 3-D modeling, rendering, and animation package offers excellent tools. *Jul 95*, p. 56
- ★★★★ Working Model**, Visual Basic, 415/574-7777, \$2495. Motion-simulation system is a fine product, but a Power Mac version is needed. *Dec 95*, p. 79
- ★★ xRes 1.11**, Fauve Software, 415/543-7178, \$799. Image editor applies a variety of effects to selected areas of a large composition. *Jul 95*, p. 60
- ### MATH/SCIENCE
- ★★★★ The Fuzzy Logic Toolbox 1.0**, MathWorks, 508/653-1415, \$895. Math-simulation aid incorporates fuzzy logic into models. *Sep 95*, p. 89
- ★★★★★/7.5 Igor Pro 2.0.4**, WaveMetrics, 503/620-3001, \$495. Top-notch scientific graphing package. *Feb 96*, p. 90
- ★★★★ LabView 3.1**, National Instruments, 512/794-0100, \$1995. Instrumentation software can emulate most scientific and electronic test-bench instruments. *Nov 95*, p. 62
- ★★★★ MLab**, Civilized Software, 301/652-4714, \$1495. Mathematical-modeling software does fast computations on real-world problems. *Apr 95*, p. 83
- ★★★★★/7.1 SPSS 6.1**, SPSS, 312/329-2400, \$695; modules \$395 to \$495. Mainframe statistics giant has new Mac interface. *Feb 96*, p. 82
- ★★★★★/8.3 StatView 4.5**, Abacus Concepts, 510/540-1949, \$595. Statistics and graphing package. *Feb 96*, p. 81
- ### ORGANIZATION/PRODUCTIVITY
- ★★★★ ClarisWorks 4.0**, Claris, 408/727-8227, \$129. Integrated program's word processor and database are superb. *Oct 95*, p. 62. **Editors' Choice** for best integrated software. *Nov 95*, p. 124
- ★★ ClienTrac 2.0**, Whiskey Hill Software, 415/851-8702, \$99. PIM is easy to use but slim on speed, features, and flexibility. *May 95*, p. 75
- ★★/3.7 Day-Timer Organizer 2.0**, Day-Timer Technologies, 415/572-6260, \$59.95. PIM has some rough edges. *Mar 96*, p. 92
- ★★★ Expresso 1.0**, Berkeley Systems, 510/540-5535, \$69.99. Calendar program is attractive and easy to use but its address book is weak. *Apr 95*, p. 73
- ★★★ FastTrack Schedule 3.0**, AEC Software, 703/450-1980, \$299. Updated version of this project planner includes customizable features. *Aug 95*, p. 79
- ★★★★ In Control for Workgroups 3.5**, Attain, 617/776-1110, \$149.95; 10-pack \$949.95. Flexible project planner/scheduler combines an outliner and a calendar. *Sep 95*, p. 93
- ★★★ InfoGenie 1.0.5**, Casady & Greene, 408/484-9228, \$79.95. Free-form data manager is appealing but lacks some of the competition's features. *Nov 95*, p. 87
- ★★★ InTouch 2.5**, Prairie Group, 515/225-3720, \$69.95. Free-form contact manager offers speedy access to information. *Sep 95*, p. 69
- ★★★ Microsoft Works 4.0**, Microsoft, 206/882-8080, \$99.95. Good word processing and drawing tools; poor spreadsheet and database modules. *Jan 95*, p. 63
- ★★★★ Now Up-to-Date and Contact 3.5**, Now Software, 503/274-2800, \$99. Calendar/address book combo features several enhancements. *Nov 95*, p. 68
- ★★★ Peanuts Family Organizer 1.0**, Individual Software, 510/734-6767, \$19.95. Organizer's endearing interface doesn't make up for missing features. *Jun 95*, p. 81
- ### PRESNTATION TOOLS
- ★★★★ Adobe Premiere 4.0 (4.0.1)**, Adobe Systems, 415/961-4400, \$795. Advances far and above its competitors with professional-level features. *Dec 94*, p. 54
- ★★★★★/7.1 Astound 2.0**, Gold Disk, 408/982-0200, \$249. Presentation graphics with a multimedia twist. *Mar 96*, p. 73
- ★★★★ Authorware Professional 3.0**, Macromedia, 415/252-2000, \$4995. Multimedia authoring program is feature-packed but costly. *Dec 95*, p. 66
- ★★★ CyberSound FX 1.0**, InVision Interactive, 415/812-7380, \$129. Plug-ins for Premiere make audio more polished, but access is cumbersome. *continues*

Star Ratings

Nov 95, p. 91

- ★★★ **Electronic Marker 1.0.2**, Consumer Technology Northwest, 503/643-1662, \$34.95. Annotation tool can enhance demonstrations but needs better layer tools. *May 95*, p. 71
- ★★★ **HyperCard 2.3**, Apple Computer, 408/996-1010, \$129. Authoring tool is an inexpensive solution for multimedia developers. *Nov 95*, p. 66
- ★★ **Living Album 2.5**, QuickMedia Labs, 408/749-9200, \$129.95. Multimedia album is hampered by a crowded interface. *May 95*, p. 81
- ★ **MediaFactory 1.0**, Nuts Technologies, 408/980-7800, \$199. Entry-level QuickTime movie editor has an awkward interface. *Nov 95*, p. 89
- ★★★★ **MediaPaint 1.0**, Strata, 801/628-5218, \$695. QuickTime paint program lets multimedia developers edit ranges of frames. *Sep 95*, p. 56
- ★★★ **Microsoft PowerPoint 4.0**, Microsoft, 206/882-8080, \$339. Presentation-graphics program is a good choice to use along with Word or Excel. *Feb 95*, p. 67
- ★★ **mPower 2.0**, Multimedia Design, 704/523-9493, \$295. Multimedia authoring tool is too limited to be compelling. *Apr 95*, p. 81
- ★★★★ **Persuasion 3.0**, Adobe Systems, 206/622-5500, \$495. Extensive charting options and hypertext options are key additions. *Sep 94*, p. 65
- ★★★★ **Presenter Professional 3.0**, VIDI, 818/358-3936, \$1995. 3-D modeling/animation package is an excellent choice for multimedia producers. *May 95*, p. 59
- ★★ **Special Delivery 2.0**, Interactive Media, 415/948-0745, \$399. Multimedia authoring tool isn't the best choice for complex projects. *Apr 95*, p. 79
- ★★★★ **TransJammer**, Elastic Reality, 608/273-6585, \$99. Plug-in for Premiere and VideoShop offers 100 video-transition effects. *Aug 95*, p. 83

PROGRAMMING

- ★★★★ **AppWare 1.2**, Novell, 801/429-7000, \$495. Development system features an easy-to-use graphical programming method. *Oct 95*, p. 68
- ★★★★ **CodeWarrior Gold 7**, Metrowerks, 512/305-0400, \$399. Key Power Mac compiler gets yet another face-lift. *Mar 96*, p. 69
- ★★★★ **FaceSpan 2.0**, Software Designs Unlimited, 214/578-6700, \$199. AppleScript interface builder lets developers create sophisticated applications. *Nov 95*, p. 64
- ★★★★ **JAM 6**, JYACC, 212/267-7722, \$2000. Development tools enable creation of large-scale corporate client-server databases. *Oct 95*, p. 70
- ★★★★ **LS FORTRAN 1.1**, Fortner Research, 703/478-0181, \$695. FORTRAN rides again, running science programs on the Power Mac desktop. *Feb 96*, p. 95
- ★★★ **Script Debugger 1.0**, Late Night Software, 604/929-5578, \$129. Script-development software improves on AppleScript, except in the debugging department. *Nov 95*, p. 85
- ★★★★ **Scripter 1.0.1**, Main Event Software, 202/298-9595, \$199. AppleScript development system offers serious debugging power. *Mar 96*, p. 88
- ★★★ **Symantec C++ 8.0**, Symantec, 503/334-6054, \$499. Compiler has been improved and expanded

but demands lots of resources. *Jul 95*, p. 62

★★★★ **Tools Plus 2.6**, Water's Edge Software, 416/219-5628, For Symantec's C/C++ and Pascal \$149 each; for both \$199; for CodeWarrior Bronze \$199; for CodeWarrior Gold \$249. Programmers' tool kit saves time. *Feb 96*, p. 92

UTILITIES

- ★★ **Adobe ScreenReady 1.0**, Adobe Systems, 415/961-4400, \$199. PostScript image rasterizer can aid multimedia developers but has some flaws. *Dec 95*, p. 71
- ★★★ **Aladdin Desktop Tools 1.0**, Aladdin Systems, 408/761-6200, \$89.95. Utilities collection is uneven but a worthwhile buy. *Aug 95*, p. 69
- ★★★★ **Arcserve for Macintosh 1.5**, Cheyenne Software, 516/484-5110, \$245 (5 users); \$495 (20 users). A good backup program for mixed-platform networks. *Jan 96*, p. 63
- ★★★★ **At Ease 3.0**, Claris, 408/727-8227, \$46. This desktop alternative lets you share your Mac and worry less. *Feb 96*, p. 81
- ★★★★ **At Ease 3.0 for Workgroups**, Apple Computer, 408/996-1010, \$295. Desktop alternative is a handy tool for network administrators. *Nov 95*, p. 83
- ★★★★ **BeyondPress 1.0**, Astrobyte LC, 303/534-6344, \$595. QuarkXPress XTension is a great way to convert documents to Web pages. *Dec 95*, p. 73
- ★★★★ **CanOpener 3.0**, Abbott Systems, 914/747-4171, \$125. Utility opens many types of files but falls short in file-search department. *May 95*, p. 67
- ★★★★ **CD Directory 1.0**, Insignia Solutions, 415/694-7600, \$69.95. Utility stores catalogs of CD directories on a hard drive. *Jul 95*, p. 73
- ★★★★ **Color Compass 1.0**, Praxisoft, 703/729-3391, \$129. Speedy, specialized tools blend, match, and tweak colors. *Aug 95*, p. 77
- ★★★★★ **Conflict Catcher 3**, Casady & Greene, 408/484-9228, \$99.95. Extension-management utility offers a friendly, flexible approach to conflict resolution. *Sep 95*, p. 69
- ★★★★ **Disc-To-Disk**, Optical Media International, 408/376-3511, \$199. Audio-capture utility is a useful tool for multimedia authors. *Jun 95*, p. 69
- ★★★★ **DOS Mounter 95 1.0**, Software Architects, 206/487-0122, \$100. Windows-to-Mac file-transfer utility gets Win 95-savvy. *Mar 96*, p. 74
- ★★★★ **DragStrip 1.0**, Natural Intelligence, 617/876-4876, \$39.95. Icon-based file and folder organizer brings order to cluttered desktops. *May 95*, p. 79
- ★★★★ **File Genie Pro 1.1**, Duet Development, 408/559-3838, \$89. Disk- and file-management utility is fast but has limited search and sort criteria. *Oct 95*, p. 87
- ★★★★ **FolderBolt Pro 1.0.3**, Kent Marsh, 713/522-5625, \$129.95. Top-notch encryption schemes secure your Mac's contents. *Jul 95*, p. 77
- ★★★★ **Gear 2.5**, Elektroson, 610/617-0850, \$799. CD-recordable mastering software is a mixed bag. *Sep 95*, p. 91
- ★★★★ **Graffiti 1.01**, Palm Computing, 415/949-9560, \$79. Teach yourself a new writing system that Newton can handle. *May 95*, p. 77
- ★★★★ **Here & Now 1.0**, Software Architects, 206/487-0122, \$89.95. File-transfer utility facilitates putting a Mac disk in a PC. *Nov 95*, p. 81
- ★★★★ **InstantReplay 1.0**, Strata, 801/628-5218, \$149. Utility records on-screen activity and saves it as a QuickTime movie. *Sep 95*, p. 89
- ★★★★ **MacOpener 1.0**, DataViz, 203/268-0030, \$75. Unintuitive Mac-to-Windows file-transfer utility. *Mar 96*, p. 75
- ★★★★ **MacTools Pro 4.0**, Symantec, 503/690-8090, \$149.95. This utility does a good job of diagnosing and fixing disk problems, but suffers from large RAM requirements and expensive tech support. *May 95*, p. 73
- ★★★★ **Menu Master Mac**, Electronic Learning Systems, 904/375-0558, \$99; 15-site license \$299. Security software is useful but could use some additional features. *Sep 95*, p. 95
- ★★★★ **MultiClip Pro 3.1**, Olduvai, 305/670-1112, \$59. Utility is what Apple's Clipboard and Scrapbook should have been. *Apr 95*, p. 67
- ★★★★ **Multimedia Utilities 1.1**, Motion Tool Works, 415/541-9333, \$99.95. Six appealing utilities address QuickTime moviemaking but you should remember to save often. *Jul 95*, p. 71
- ★★★★ **Norton Utilities for Macintosh 3.1**, Symantec, 503/334-6054, \$149.95. Utilities suite features strong disk repair and data recovery but weak backup. *Feb 95*, p. 63
- ★★★★ **Now Utilities 5.0**, Now Software, 503/274-2800, \$89. Well-integrated collection of utilities. *Jan 95*, p. 65
- ★★★★ **On Cue II Utilities 3.0**, ComputerEasy International, 602/829-9614, \$99.95. Eight utilities add functionality to the Mac Operating System. *Sep 95*, p. 93
- ★★★★ **OptiMem RAM Charger 2.0.1**, Jump Development Group, 412/681-2692, \$129. Use RAM more efficiently with this memory-management utility. *Jul 95*, p. 75
- ★★★★ **PaperPower 1.0**, Pipet, 513/294-6656, \$149. Graphics-tablet utility is useful for macros, but its overlays can be tricky. *Apr 95*, p. 87
- ★★★★ **Power Secretary Power Edition 2.0**, Articulate Systems, 617/935-5656, \$2495. Speech-recognition program learns your voice patterns as you use it. *Sep 95*, p. 60
- ★★★★ **QuicKeys 3.0**, CE Software, 515/221-1801, \$139. Easy-to-use shortcut manager. *Mar 94*, p. 61
- ★★★★ **RAM Doubler 1.0.1 (1.5)**, Connectix, 415/571-5100, \$99. Inexpensive system extension really does double your RAM. *May 94*. **Editors' Choice** for best memory booster. *Jun 94*, p. 118
- ★★★★ **RapidCD 1.04**, Insignia Solutions, 415/694-7600, \$69.95. Utility provides speedy access to frequently used data on CD-ROM. *Jul 95*, p. 73
- ★★★★ **RescueTxt 1.0**, Abbott Systems, 914/747-3116, \$79. Text-retrieval utility works well but doesn't tell you the source file's name. *Apr 95*, p. 83
- ★★★★ **S/Link 2.0**, Syncavier, 603/448-8887, \$249. Utility is a valuable aid for anyone who does audio file conversion. *Nov 95*, p. 91
- ★★★★ **SCSI Director Pro 4.0**, Transoft, 805/897-3350, \$99.95. Hard disk formatting and testing utility. *Feb 96*, p. 86
- ★★★★ **Speed Doubler 1.0.2**, Connectix, 415/571-5100, \$99. Connectix makes a Power Mac's 680XO emulation feel native. *Feb 96*, p. 56
- ★★★★ **StuffIt Deluxe 3.5**, Aladdin Systems, 408/761-6200, \$129.95. If you're looking for a compression solution, this is it. *Mar 95*, p. 69
- ★★★★ **TypeTamer 1.0.4**, Impossible Software, 714/470-4800, \$59.95. Versatile font utility provides information on installed fonts and simplifies tasks such as typing special characters and reselecting fonts from the menu. *May 95*, p. 77

Hot new directory

Don't miss
Macworld
Directory,
the **hottest**
new section
to hit *Macworld*.

Macworld
Directory
is your one-stop
buying resource,
putting you in
touch with the
products and
services you're
looking for.

You'll find
Macworld
Directory
after the Macworld
Shopper section.

- ★★★ **ultraSecure 3.524**, usrEZ Software, 714/756-5140, \$239. Security program offers a comprehensive set of protection tools. *Sep 95, p. 81*
- ★★★★ **Virex 5.5.1**, Datawatch, 508/988-9700, \$99.95. Comprehensive, reliable, and speedy virus-detection utility helps protect files. *May 95, p. 65*
- ★★★ **Zonkers 1.0**, Nova Development, 818/591-9600, \$19.95. Redecorate your Mac with a collection of silly desktop enhancements. *Aug 95, p. 89*

VERTICAL MARKETS

- ★★★ **ConcertWare 1.5.7**, Jump Software, 415/917-7460, \$159. Music-notation program is affordable and easy to use, but lacks features. *Jun 95, p. 75*
- ★★★★ **FreeStyle 1.01**, Mark of the Unicorn, 617/576-2760, \$200. Music sequencer with notation is a good choice for beginners. *Nov 95, p. 70*
- ★★★ **Insta Software**, Chang Labs, 408/727-8096, \$29 per module. No-frills relational databases handle forms and record-keeping for businesses. *Aug 95, p. 77*
- ★★★★ **Nightingale 2.0**, TAP Music Systems, 206/462-1007, \$495. Music-notation software is fast, feature-laden, and easy to learn. *Oct 95, p. 81*
- ★★★★ **Overture 1.02**, Opcode Systems, 415/856-3333, \$495. Easy-to-learn music-notation software has a friendly interface. *Apr 95, p. 75*
- ★★★/6.9 **Quicken Family Lawyer 6.0b**, Parsons Technology, 319/395-9626, \$49. Helps you prepare 61 legal documents. *Feb 96, p. 88*
- ★★★ **Route 66 1.5**, Route 66 Geographic Information Systems B.V., 415/957-0666, \$79.95. Route planner is fast but omits some cities. *May 95, p. 65*
- ★★★ **Storyboard Artist 1.5**, PowerProduction Software, 310/937-4411, \$499. Storyboard-creation software is useful but expensive. *Oct 95, p. 91*
- ★★ **Visual Arranger 1.0**, Yamaha Corp. of America, 714/522-9240, \$59.95. Song-building software is innovative, but replacing notation with icons doesn't work. *Nov 95, p. 89*

WRITING TOOLS

- ★★★★ **EndNote Plus 2.0**, Niles & Associates, 510/649-8176, \$299. Indispensable bibliography and citation manager is easy to learn and use. *Apr 95, p. 77*
- ★★★ **FullWrite 2.01**, Akimbo Systems, 617/776-5500, \$395. Although its modular architecture is complex, this word processor is worth considering. *Apr 95, p. 69*
- ★★★ **Inspiration 4.1**, Inspiration Software, 503/245-9011, \$195. Writing tool shows the relationships between ideas. *Apr 95, p. 75*
- ★★★ **Microsoft Word 6.0 (6.0.1)**, Microsoft, 206/882-8080, \$339. Word processor's many new features may benefit users with fast Macs. *Feb 95, p. 53*. **Editors' Choice** for best high-end word processor. *Mar 95, p. 106*
- ★★★ **Nisus Writer 4.0**, Nisus Software, 619/481-1477, \$495. Word processor excels in specialized areas but has flawed table editor. *Mar 95, p. 53*
- ★★ **Read-It O.C.R. Pro 5.0**, Olduvai, 305/670-1112, \$395. OCR software has nice features but its recognition engine isn't up to par. *Apr 95, p. 79*
- ★★★★/7.1 **Spelling Coach Professional 4.1**, Deneba Software, 305/596-5644, \$69.95. Adds dictionary and thesaurus to almost any application. *Mar 96, p. 80*

hardware

INPUT DEVICES

- ★★★★ **ArtPad**, Wacom Technology, 360/750-8882, \$199. Pressure-sensitive tablet is sheer convenience. *Apr 95, p. 67*
- ★★★★ **ArtZ II**, Wacom Technology, 360/750-8882, \$389.99. Graphics tablet has unique stylus that erases as well as draws. *Dec 95, p. 79*
- ★★★ **ChoiceStick 1.0.2**, Kernel Productions, 302/456-3026, \$69.95. Port lets you attach a pair of joysticks to a Mac. *Sep 95, p. 85*
- ★★★/6.0 **Desktop GlidePoint**, Alps Electric, 408/432-6000, \$99.95. New input device offers adjustable base and cursor-release delay. *Feb 96, p. 68*
- ★★★★ **DrawingSlate II**, CalComp, 602/948-6540, \$395. Responsive digitizing tablet is an excellent choice for artists and illustrators. *Jun 95, p. 83*
- ★★★ **GlidePoint**, Alps Electric, 408/432-6000, \$99. Alternative pointing device lets you position the cursor by moving your finger. *Jul 95, p. 77*
- ★★ **Jetstick**, CH Products, 619/598-2518, \$74.95. Joystick's hardware is fine, but its manual and software are inadequate. *Sep 95, p. 95*
- ★★★ **MacAlly**, The Mace Group, 213/780-6110, \$49. ADB mouse doesn't stand out from the crowd, but is durable and affordable. *Jul 95, p. 75*
- ★★★ **Mouse-Trak**, Itac Systems, 214/494-3073, \$179. Input device is sturdy, but buttons can be hard to reach. *Nov 95, p. 83*
- ★★★★/9.6 **PaperPort Vx**, Visioneer, 415/493-9599, \$369. Desktop document scanner just gets better. *Mar 96, p. 82*
- ★★ **Point Pad**, Hagiwara Sys-Com, 619/546-9989, \$99. Pointing device is compact but can be awkward to use. *Oct 95, p. 87*
- ★★★★/7.0 **QuePoint II**, MicroQue, 801/263-1883, \$79.95. Despite the drawbacks of a touchpad, the QuePoint's excellent software makes it a clear winner. *Feb 96, p. 68*
- ★★★ **Remote Point**, InterLink Electronics, 805/484-1331, \$199. Cordless pointing device is handy, but controlling objects onscreen can be hard. *Apr 95, p. 85*
- ★★★★ **Thinking Mouse Macintosh ADB**, Kensington Microware, 415/572-2700, \$139.95. Mouse has 4 programmable buttons that can automate tasks. *May 95, p. 83*
- ★★★/4.3 **TouchPad**, Touché Technologies, 612/830-1414, \$59.95. The TouchPad matches the PowerBook's dark case. *Feb 96, p. 68*
- ★★★ **Trackball Pro ADB**, CH Products, 619/598-2518, \$119.95. Inexpensive trackball falls short in programmability and overall functionality. *Sep 95, p. 91*

MISCELLANEOUS HARDWARE

- ★★★/6.4 **Chinon ES-3000**, Chinon America, 310/533-0274, \$1095. Digital camera zooms in but with the high price doesn't measure up to Kodak Digital continues

Star Ratings

Camera 40. Mar 96, p. 77

★★★★ Colortron, Light Source Computer Images, 415/925-4200, \$1195. Hand-held spectrophotometer helps match on-screen and printed colors. Jun 95, p. 56

★★★★ DayStar PowerPro 601/DayStar Turbo 601, DayStar Digital, 404/967-2077, PowerPro 601 \$1599; Turbo 601 \$1499. Impressive 601-based accelerator cards squeeze more performance out of Macs. Sep 95, p. 67

★★★ Kodak Digital Camera 40, Eastman Kodak, 716/726-7260, \$995. Digital camera can use 37mm lens but has some flaws. Jan 96, p. 59

★★★ QuickTake 150, Apple Computer, 408/996-1010, \$739. Digital camera is easy to use and includes close-up lens. Jan 96, p. 59

★★★★ Reno Portable CD-ROM Player, Media-Vision, 510/770-8600, \$349. Portable CD-ROM player is lightweight, versatile, and easy to set up. Jun 95, p. 65

★★ Smart Label Printer EZ30, Seiko Instruments USA, 408/922-5800, \$199. Label printer's print quality and speed are disappointing. Nov 95, p. 72

★★★ SoftBoard Model 205, Microfield Graphics, 503/626-9393, \$2795. Electronic whiteboard is expensive but does the job. Jan 96, p. 71

MODEMS/NETWORK HARDWARE

★★★★ GeoPort Telecom Adapter Kit, Apple Computer, 408/996-1010, \$129.95. Adapter unlocks the capabilities of Apple's GeoPort modem. Oct 95, p. 75

★★★★ Internet Server Solution for WWW, Apple Computer, 408/996-1010, \$2909. Web server is ideally suited for small-business sites. Oct 95, p. 65

★★ Manta 500EN; Starfish Ethernet Access Point, Digital Ocean, 913/888-3380, Manta \$799; Starfish \$1850. Wireless-communications package is capable but much too expensive. Dec 95, p. 77

★★★★ OneWorld Combo, Global Village Communication, 408/523-1000, \$1499 without modems; \$2099 with modems. Server is the very model of a multiuser modem pool. Sep 95, p. 78

★★★★ OneWorld Internet 1.0, 700 Series, Global Village Communication, 408/523-1000, \$1699 plus monthly fee. Internet gateway offers E-mail and Internet access in an approachable format. Jun 95, p. 63

★★★★ Power Class 28.8 Data/Fax Modem, Motorola, 205/430-8000, \$395. Fax modem's hardware is superb, but it's hampered by mediocre software. Oct 95, p. 89

★★★★ TelePort Platinum, Global Village Communication, 408/523-1000, \$279. Reliable fax modem includes call recognition and an answering machine. Aug 95, p. 81

PRINTERS

★★★★ Apple Color StyleWriter 2200, Apple Computer, 408/996-1010, \$419. Portable ink-jet printer is ideal for color output when you're on the road. Nov 95, p. 66

★★★★ Apple Color StyleWriter 2400, Apple Computer, 408/996-1010, \$525. Economical color ink-

jet printer offers gorgeous output. Apr 95, p. 63

★★★★★ Fargo FotoFun, Fargo Electronics, 612/941-9470, \$399.95. Dye-sublimation printer produces good output at a reasonable price. Jan 96, p. 61
★★★★/5.4 HP CopyJet M, Hewlett-Packard, 800/752-0900, \$3649. Color copier and ink-jet printer in a single unit. Feb 96, p. 77

★★★★★ HP LaserJet 5MP, Hewlett-Packard, 800/752-0900, \$1299. Laser printer meets the high demands of small businesses and home offices. Jul 95, p. 58

★★★★★ LaserWriter 4/600 PS, Apple Computer, 408/996-1010, \$929. Compact printer produces great-looking 600-dpi output. Dec 95, p. 60

★★★ Nikon Coolprint, Nikon Electronic Imaging, 516/547-4355, \$2350. Color dye-sublimation printer is fast, but print quality is flawed. Sep 95, p. 83

★★★★★ Phaser 140, Tektronix, 503/627-7111, \$1695. Ink-jet is a capable color printer for a small workgroup. Apr 95, p. 63

★★★★★ Pictura 310, Fargo Electronics, 612/941-9470, \$4995; optional Adobe Level 2 PostScript package \$795. Printer produces acceptable print quality, but its color-matching capabilities are substandard. Jul 95, p. 61. **Editors' Choice** for best low-end dye-sublimation printer. Jan 96, p. 94

★★★★★ StyleWriter 1200, Apple Computer, 408/996-1010, \$269. Newest model of Apple's ink-jet printer offers improved print quality. Sep 95, p. 65

★★★★★ Stylus Color, Epson America, 310/782-0770, \$699. Color ink-jet's print quality is superb and its price is reasonable. May 95, p. 58

★★★★★ Typhoon 8, Dataproducts, 818/887-8000, \$3100 (600 dpi, 4MB of RAM); \$5199 (1200 dpi, 36MB of RAM). Workgroup printer offers top-notch 1200-dpi output but is a bit pricey. Dec 95, p. 64

★★★ Xerox 4510ps, Xerox, 800/349-3769, \$1745. Printer has neither the performance nor the quality to justify its price. Dec 95, p. 68

SCANNERS

★★/3.3 ArtiScan Z1-600, Tamarack, 714/744-3979, \$649. The ArtiScan Z1-600's poor software, manual, and scanning performance make it hard for us to recommend it, even at its low price. So we won't. Mar 96, p. 118

★★/3.3 Color OneScanner, Apple Computer, 408/996-1010, \$859. The Color OneScanner's anemic software bundle and lackluster performance would make it an unexceptional offer even if reasonably priced. Mar 96, p. 118

★★/3.1 CS-300, Ricoh, 408/954-5326, \$599. The CS-300 scanner has one thing going for it: it's dirt cheap. Unfortunately, with performance, software, and documentation this weak, it's still overpriced. Mar 96, p. 118

★★ Digital Fotovix IIIS-D, Tamron Industries, 516/484-8880, \$2299. Video slide scanner's image quality doesn't measure up to the competition. Jan 96, p. 67

★★★★/7.2 ES-1200C, Epson, 310/782-0770, \$1299. The ES-1200C scanner has great image quality, respectable speed, and good software, all at a reasonable price. Mar 96, p. 118. **Editors' Choice** for best midrange scanner.

★★★★ Fujitsu ScanPartner Jr., Fujitsu Computer Products of America, 408/432-6333, \$499. Compact scanner with good OCR software is an economical scanning solution. Jul 95, p. 63

★★★★/7.1 Gemini D-16, Umax, 510/651-4000, \$1895-\$1995. The Gemini D-16 is unique in being

both a 400-dpi and 800-dpi scanner, depending on the scanning area. But for several hundred dollars above its competitors, you'd better need that extra resolution. Mar 96, p. 118

★★★★ HP ScanJet 3c, Hewlett-Packard, 208/323-2551, \$1179. Economical scanner offers a broad tonal range and accurate colors. Oct 95, p. 79

★★★★/6.1 HP ScanJet 4c, Hewlett-Packard, 208/396-2551, \$1175. The HP ScanJet 4c is a respectable performer in all categories, though not exceptional. Limited software is its greatest weakness. Mar 96, p. 118

★★★★/3.8 IX-4015, Canon, 714/438-3000, \$799. Boasts desk-space economy and an exceptional warranty, but its performance and software bundle are mediocre. Mar 96, p. 118

★★★★/4.0 Paragon 1200SP, Mustek, 714/250-8855, \$899-\$1000. The Paragon 1200SP is a disappointment, from its performance to its bare-bones manual. Proof that a 600-dpi, 30-bit scanner for \$799 isn't a bargain. Mar 96, p. 118

★★★ Pro Imager 4000, PixelCraft, 510/562-2480, \$2995. Scanner delivers excellent highlight detail but produces noise in shadow areas. Jun 95, p. 59

★★★★ Pro Imager 8000, PixelCraft, 510/562-2480, \$12,995. Demanding prepress users will like this scanner. Jun 95, p. 59

★★★★ Reli 4830T, Relisys, 408/945-9000, \$1699. If you can live with slow performance, this scanner is a bargain. Jun 95, p. 71

★★★★/5.0 ScanMaker IIsp, Microtek, 310/297-5000, \$499-\$699 (street). The ScanMaker IIsp is a shaky performer at best, especially when it comes to capturing highlight detail (it doesn't), but it's an option for the bargain hunter. Mar 96, p. 118

★★★★/5.8 ScanTouch AX-1200, Nikon, 516/547-4355, \$1720. The ScanTouch AX-1200 is a solid performer, but at this price it should be closer to stunning. Mar 96, p. 118

★★★★/5.6 Silverscanner III, La Cie, 503/520-9000, \$1499-\$1699. The Silverscanner III is a good performer in many respects, but its poor color accuracy and high price place it behind the Epson ES-1200C on which it's based. Mar 96, p. 118

★★★★ SprintScan 35, Polaroid, 617/386-2000, \$2495. Compact, efficient, cost-effective scanner transfers slides or negatives to a Mac. Jun 95, p. 79

★★★★/5.9 StudioScan IISi, Agfa, 508/658-5600, \$900 (street). The StudioScan IISi gets good performance from its 30-bit, 400-dpi engine. Agfa's software is powerful and flexible but could be easier to use. Mar 96, p. 118

★★★★ Vista-S8, Umax Technologies, 510/651-8883, \$995 (LE+); \$1095 (Pro+). 24-bit color flatbed scanner has a lot of useful features for its low price. Jul 95, p. 67

SPEAKERS

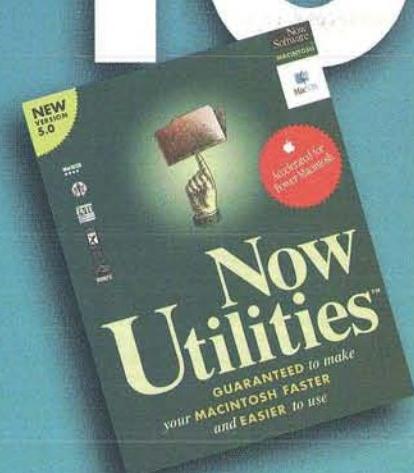
★★★★/8.8 Acoustimass, Bose, 508/879-7330, \$699. Full, rich, natural sound; treble slightly rolled off but clean. Mar 96, p. 157. **Editors' Choice** for best high-end three-piece speakers.

★★★★/7.1 ACS 52, Altec Lansing, 717/296-2818, \$128. Clean, reasonably solid presentation; crisp highs; powerful bass for such a small design. Mar 96, p. 157

★★★★/7.1 AMX-16, Radio Shack, 817/390-3300, \$120 (street). Clean, reasonably crisp, slightly bright, decent bass, somewhat lacking in low-end heft. Mar 96, p. 157

★★★★/6.8 AppleDesign Powered Speakers, Apple

How to make 7.5 a 10



"Now Utilities is the best overall collection of utilities you can buy for your Mac."

— MacUser, August 1995

To find out how to make System 7.5 even faster and easier to use, call:

1-800-237-2078
Circle 38 on reader service card

Now Software

It's about time.

Computer, 408/996-1010, \$179. Clean, reasonably solid presentation. Bass is good but doesn't shake the foundation. Mar 96, p. 157

★★★/4.9 AV270 Powered Speakers, Advent, 708/317-3700, \$179. Clean and smooth. Somewhat tinny quality to midrange and highs. Mar 96, p. 157

★★★/6.2 AV622 Powered Speakers, Advent, 708/317-3700, \$299. Clean and smooth, with somewhat lightweight character. Slight treble emphasis. Bass has reasonable weight and impact. Mar 96, p. 157

★ EAB401P Speakers, Panasonic Communications & Systems, 800/742-8086, \$99. Small, inexpensive speakers provide less-than-state-of-the-art performance. Apr 95, p. 58

★★★ EAB701P Speakers, Panasonic Communications & Systems, 800/742-8086, \$249. The sound of these speakers is thin and slightly harsh. Apr 95, p. 58

★★★/5.2 J-688AV, Jazz, 818/336-2689, \$149. Reasonably smooth sound, noticeably rolled-off high end, slightly harsh midrange becomes a bit fatiguing over a long listening session. Mar 96, p. 157

★★★/4.7 J-902, Jazz, 818/336-2689, \$150. Clear reproduction, with moderate bass emphasis and overemphasized treble. Generally thin sonic character because of the high-frequency emphasis. Mar 96, p. 157

★★★/5.8 JPS 45, Jensen, 708/317-3700, \$149. Clean, reasonably crisp, slightly bright; an almost sandpaper affect on cymbals; adequate bass, but somewhat lacking in low-end heft. Mar 96, p. 157

★★★/3.5 LCS-3210, Labtec, 360/896-2000, \$119 (street). Decent, slightly boomy bass, harsh midrange, rolled-off treble. Sound gets harsher when played at loud volumes. Mar 96, p. 157

★★★/6.2 MA-12CP, Roland, 213/685-5141, \$319. Relatively warm, well-balanced sound; slightly lightweight bass. Tends to sound harsh when played at normal volume levels. Mar 96, p. 157

★★★★/7.8 MediaMate, Bose, 508/879-7330, \$339. Full, warm, rich, natural sound. Cymbals had considerable clarity and detail and sounded realistic. Amazingly robust for such a small speaker. Mar 96, p. 157. **Editors' Choice** for best desktop speakers.

★★★/6.6 MLI-95, Midi Land, 909/592-1168, \$120. Surprisingly good sound for the money. Clean, reasonably clear; fine musical details are a wee bit indistinct; has good voice reproduction, adequate bass. Smooth highs, accurate presentation. Mar 96, p. 157

★★★★/7.5 MMS 557, Audio-Technica, 216/686-2600, \$150. Relatively clean, slightly bright, crisp sound. Surprisingly robust bass for a small box. Mar 96, p. 157

★★ NEC AudioTower, NEC Technologies, 708/860-9500, \$99. Speaker system's sound quality is nothing to shout about. May 95, p. 81

★★★★/7.9 SoundWorks, Cambridge SoundWorks, 617/332-5936, \$220. Clean, well-balanced sound, slight upper midrange emphasis, good bass. Mar 96, p. 157. **Editors' Choice** for best low-end three-piece speakers.

★★★/5.7 SurroundSound ACS 500, Altec Lansing, 717/296-2818, \$450. Robust sound, slightly smeared highs, and slight harshness when played at loud volume. Bass is powerful, but a bit boomy. Mar 96, p. 157

★★★/3.7 SW150, Koss, 414/964-5000, \$180. Weak

bass, harsh midrange, rolled-off treble. No saving graces. Mar 96, p. 157

★★★/6.4 TC1490-7SUB, Multimedia Labs, 410/429-4300, \$249. Clean sound and thin balance; adjusting subwoofer output just makes bass boom, but bass is always lightweight. Mar 96, p. 157

★★★ Vivid 3D Pro, NuReality, 714/442-1080, \$149.95. Sound-enhancement system produces 3-D sound from a pair of speakers. Aug 95, p. 87

★★★/6.4 YST-SS1010, Yamaha Corp. of America, 714/522-9240, \$350. Relatively warm, well-balanced sound, slightly rolled-off treble with slight smearing effect on cymbals, average bass impact with subwoofer. Tends to sound harsh when played at loud volume levels. Mar 96, p. 157

SYSTEMS/STORAGE

★★★ Envoy Wireless Communicator, Motorola, 800/894-7353, \$1000 to \$1500. Magic Cap-based PDA was our reviewers' first choice for E-mail. Aug 95, p. 62

★★★ EZ135, SyQuest Technology, 510/226-4000, \$249. Removable drive is fast and comes with a fine selection of bundled software. Dec 95, p. 58

★★★ Marco Wireless Communicator, Motorola, 800/894-7353, \$900 to \$1400. Newton OS-based PDA includes a radio modem. Aug 95, p. 62

★★★ Master CD Pro, MicroNet Technology, 714/453-6000, \$4995. Recordable CD-ROM drive is a good tool for professional CD production. Aug 95, p. 83

★★★★/7.5 MessagePad 120 with Newton OS 2.0, Apple Computer, 408/996-1010, \$699. If the first Newton had been this good, you'd already have one. Mar 96, p. 57

★★★★/5.6 Performa 5125CD, Apple Computer, 408/996-1010, \$2300. The all-in-one design is appealing, but the performance is just so-so. Feb 96, p. 96

★★★★/7.1 Power 100, Power Computing, 512/258-1350, \$1699. Powerful and inexpensive, the Power 100 comes bundled with all the extras you'd want. Feb 96, p. 96. **Editors' Choice** for best home-and-small-office Mac.

★★★★/7.4 Power 120, Power Computing, 512/258-1350, \$1999. Like its Power 100 sibling, this system offers strong performance at a good price. Feb 96, p. 96

★★★★/5.8 PowerBook 5300, Apple Computer, 408/996-1010, \$2300. A gray-scale screen and middling performance make this just an acceptable notebook. Feb 96, p. 96

★★★★/5.9 PowerBook 5300c, Apple Computer, 408/996-1010, \$4500. A great color screen and strong expandability balance with so-so performance. Feb 96, p. 58. **Editors' Choice** for best portable Mac. Feb 96, p. 96

★★★★/5.9 PowerBook 5300cs, Apple Computer, 408/996-1010, \$3600. Good expansion, so-so speed, and a decent color screen make this fine for short-term use. Feb 96, p. 96

★★★★/6.5 Power Macintosh 7200/75, Apple Computer, 408/996-1010, \$1600. A dumbed-down version of the 7500, this system offers just the basics. Feb 96, p. 96

★★★★/7.8 Power Macintosh 7500/100, Apple Computer, 408/996-1010, \$3100. Powerful and relatively inexpensive, the Power Mac 7500/100 shines in its easy-to-upgrade design. Feb 96, p. 96. **Editors' Choice** for best business-and-professional Macintosh.

continues

PowerCADD™

Power Macintosh version of PowerDraw

300% faster than ever



File Size	PowerCADD 2.0	PowerDraw 6.0	PowerDraw 5.0
(SCREEN REDRAW TIMES - SECONDS)*			
1.5 MB	2.27	8.5	28.85
6.4 MB	5.49	18.12	38.25
1.0 MB	1.68	3.87	7.87

*Test conducted on a Power Macintosh 8100/100AV for PowerCADD 2.0 and a Macintosh Quadra 630 for PowerDraw versions.

MACWORLD



Macworld October 1995

"...PowerCADD's greatest benefit is speed..."

"PowerCADD does the best job of harnessing the Power Mac's capabilities I've seen."



MacUser October 1995

"...PowerCADD's programmability and extensibility may make PowerCADD a better choice than high-end CAD programs."

score card

MacWEEK



MacWEEK July 10, 1995

"...a 1.4 MB (PowerCADD) file on the Power Mac updated more than two times faster on the Power Macintosh (redraw speed of five seconds)."

InfoWorld July 24, 1995

"PowerCADD 2.0 boasts faster redraw times, faster editing and processing speeds, improved layer controls, enhanced editing commands, and a redesigned interface."

ENGINEERED
SOFTWARE™

Call 910-299-4843

Fax 910-852-2067

In Canada 204-453-8111

Star Ratings

★★★ Power Macintosh 8100/110, Apple Computer, 408/996-1010, \$6379. Power Mac offers increased speed and improved NuBus circuitry. Mar 95, p. 50

★★★★/7.7 Power Macintosh 8500/120, Apple Computer, 408/996-1010, \$4200. The 8500's 604 CPU and bundled cache give it good performance. Feb 96, p. 96. Editors' Choice for best publishing and graphics Mac and best media-authoring Mac.

★★★ Power Macintosh 9500/132, Apple Computer, 408/996-1010, \$5799. Power Macintosh offers speed, expansion, and lots of memory. Oct 95, p. 60

★★★★/7.6 PowerWave 604/120, Power Computing, 512/258-1350, \$3199. Power Computing has made the 604 CPU available at 601-based systems' prices. Feb 96, p. 54. Editors' Choice for best business-and-professional Mac. Feb 96, p. 96

★★★★/7.6 PowerWave 604/132, Power Computing, 512/258-1350, \$3699 (256K cache card included). This fast, sensibly priced system, which comes bundled with bonus software, is a great value. Feb 96, p. 54

★★★★/7.7 PowerWave 604/150, Power Computing, 512/258-1350, \$4499 (512K cache card included). The fastest Mac currently available, the price is not quite as attractive as for other PowerWave models. Feb 96, p. 54

★★★ RCD-1000, Pinnacle Micro, 714/727-3300, \$1695. CD-Recordable drive is easy to use but too unreliable for day-to-day backup. Jun 95, p. 81

★★★/5.1 SCSI PowerPlug II, Hot Wire Technology, 203/761-0651, \$119.99. A fast way to swap SCSI devices. Feb 96, p. 86

★★★ SledgeHammer8000FT, FWB, 415/325-4392, \$23,599. Level 5 RAID array provides constant access to your stored information. Sep 95, p. 59

★★★ Sony Magic Link, Sony, 800/571-7669, \$699.95. Using this PDA is a breeze, but it lacks applications. Aug 95, p. 62

★★★★/5.8 System 100, Radius, 408/541-6100, \$10,500. Radius bundles its mediocre digital-video cards on a relabeled Power Mac 8100—that's no wise investment. Feb 96, p. 96

★★★★ Zip Drive, Iomega, 801/778-1000, \$199.95; 100MB cartridge \$19.95. External drive combines speedy performance, convenience, and economy. Jul 95, p. 59

VIDEO/DISPLAY

★★★/4.2 AlphaScan GLX, Sampo Technology, 770/449-6220, \$1495. Low price fails to outweigh poor image quality. Feb 96, p. 165

★★★★/5.5 Diamond Pro 21TX, Mitsubishi Electronics America, 714/220-2500, \$2199. Washed-out colors hold back an otherwise strong contender. Feb 96, p. 165

★★★★ EAsycolor 24/1360, EA Research, 510/867-0967, \$1699. Video board offers Photoshop CMYK acceleration and multisync monitor support. Aug 95, p. 64

★★★★ Encoder Pro, P2 Systems, 206/525-2081, \$259. Inexpensive Mac-to-TV adapter is a good value. Jan 96, p. 69

★★★/4.4 FlexScan F2 21, Nanao, 310/325-5202, \$2299. Blurry, dim image and too high a price. Feb 96, p. 165

★★★/4.8 Multigraph 445X, Nokia Display Products, 415/943-4071, \$2775. Adequate image quality, but at too high a price. Feb 96, p. 165

★★★★/6.2 Multiple Scan 20 Display, Apple Computer, 408/996-1010, \$2149. Not as vibrant as it could be, but good value. Feb 96, p. 165

★★★★/5.9 MultiscanTC, Sony, 408/432-0190, \$3950. Special color-adjustment tools don't overcome mediocre performance. Feb 96, p. 165

★★★★/7.3 MultiSync XE21, NEC Technologies, 508/264-8000, \$1899. Rich, bright images complemented by excellent controls. Feb 96, p. 165

★★★★/5.8 MultiView 21, Radius, 408/541-5700, \$2149. Seductively rich colors, but too soft a focus. Feb 96, p. 165

★★★★ PaintBoard Prism GT, RasterOps, 408/562-4200, \$999. Video board offers good QuickDraw acceleration but no Photoshop acceleration. Aug 95, p. 64

★★★★/5.0 PanaSync/Pro C2192P, Panasonic Communications & Systems, 201/348-7000, \$1999. Reasonable price fails to overcome weak image quality. Feb 96, p. 165

★★★★/6.6 Pivot 1700, Portrait Display Labs, 510/227-2700, \$1099. Good image quality but doesn't automatically switch views when rotated. Mar 96, p. 70

★★★★ Presenter TView, TView, 503/643-1662, \$449. Reliable Mac-to-TV adapter produces an excellent picture. Jan 96, p. 69

★★★★/8.6 PressView 21 SR, Radius, 408/541-6100, \$3,999. The best professional-quality display gets better. Feb 96, p. 62

★★★★ QA-1500, Sharp Electronics, 201/529-8731, \$5795. LCD panel's display is crisp, but placing a presentation on its PC Card is cumbersome. May 95, p. 69

★★★★ Radius Telecast, Radius, 408/541-6100, \$9995. QuickTime-based video editor has potential, but software is not yet mature. Jan 96, p. 65

★★★★/7.3 RasterOps SuperScan Mc 21, NSA/Hitachi, 617/461-8300, \$2299. Top performance plus sensible, intuitive controls create a winning combination. Feb 96, p. 165. Editors' Choice for best two-page monitor.

★★★★ SpigotPower AV, Radius, 408/541-6100, \$999. Make full-screen movies with this first-rate video-compression board. Jun 95, p. 67. Editors' Choice for best digital-video card. Aug 95, p. 112

★★★★/4.1 SyncMaster 20GLs, Samsung Electronics America, 201/691-6200, \$1599. Glare-catching, image-distorting tube and weak controls. Feb 96, p. 165

★★★★ Targa 2000 1.2, Truevision, 408/562-4200, \$5495. Video board offers good picture quality and fully synced 16-bit audio. Dec 95, p. 71

★★★★ Thunder IV GX 1360, Radius, 408/541-6100, \$2999. Video board provides impressive QuickDraw and Photoshop acceleration. Aug 95, p. 64

★★★★ VideoDirector 1.5, Gold Disk, 408/782-0200, \$199.95. Low-end video-editing system logs, edits, and organizes videotape footage. Jun 95, p. 75

★★★★/5.8 ViewSonic 21PS, ViewSonic, 909/869-7976, \$2095. Bright, vibrant, though not particularly sharp image. Feb 96, p. 165

★★★★/5.3 VisionMaster Pro 21, Iiyama North America, 215/957-6543, \$1995. Good image quality, but confusing controls. Feb 96, p. 165

Pogue & Schorr ARE BACK

And Better Than Ever!

INTERNATIONAL BESTSELLER
Over 300,000 Copies in Print!

The 3rd time is the charm

for this dynamic and bestselling expert author duo as they combine their Macintosh expertise and know-how to bring you the latest undocumented tricks, productivity shortcuts, and secrets that Macintosh users of all levels need to know.

- All new coverage on the Internet and the Web, PCI Power Macs, Zip disks, System 7.5.3, OpenDoc, DIMMs, and more!
- Special sneak preview of Copland!
- Insider tips on all Macs, Performas, Power Macs, and PowerBooks!
- Check out your model's expansion potential!
- Troubleshoot almost anything!

Also, check out the hilarious, incisive debates between the authors that tackle the eternal questions:

- Leave the Mac on at night?...
- Upgrade to Word 6?...
- Performa or not?...
- And more...

"The best Mac book of the year."

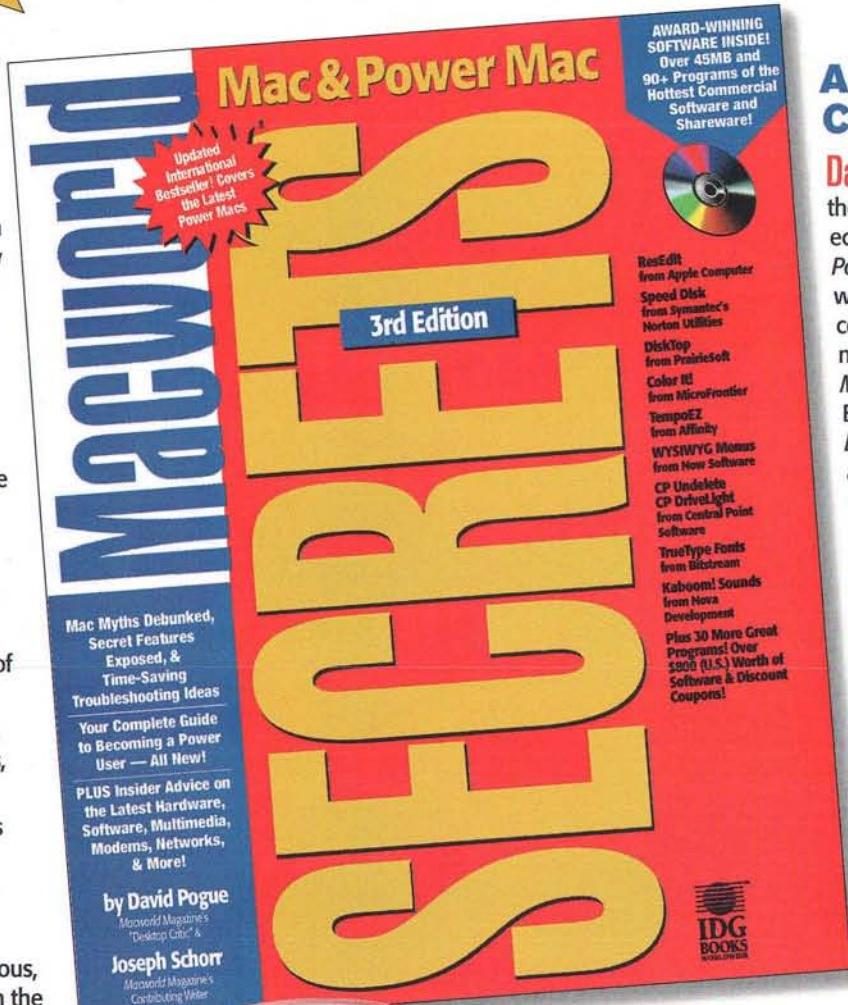
—Boston Computer Society

"...this book kept me up nights, looking for more great secrets."

—The Washington Post

"Pogue & Schorr's casual, atypical, yet efficient writing style typifies the whole Mac mentality. Others, who write about Macs in the dry, manual-like monotone, just miss the point."

—Randy Fippinger, New York, NY



AWARD-WINNING
SOFTWARE INSIDE!
Over 45MB and 90+ programs
of the Hottest Commercial
Software and Shareware!

For more information on other Mac bestsellers from IDG Books Worldwide, or to order a free catalog, call:

1(800) 762-2974 USA
1(800) 667-1115 Canada

Macworld
PRESS

IDG Books Worldwide, Inc.

919 E. Hillsdale Blvd., Ste. 400

Foster City, CA 94404

Tel (415) 655-3000

Fax (415) 655-3299

<http://www.idgbooks.com/>

MW4/96

Mac and Macintosh are registered trademarks, and Power Mac is a trademark of Apple Computer. Macworld is a registered trademark of International Data Group, Inc. — SECRETS is a registered trademark, and the IDG Books Worldwide logos are trademarks under exclusive license to IDG Books Worldwide, Inc. from International Data Group, Inc.

RUN, don't walk, to
your local book or
computer store!

YOUR MARKET RESOURCE TO THE WORLD WIDE WEB

Adobe Systems

IMAGINE

If you can dream it, you can do it.



Read Me First What's New
 About Adobe Adobe Acrobat
 Adobe Products Tips & Techniques
 Support & Training Free Adobe Software!
 Customer Spotlights Elsewhere on the Web

Adobe™ hardware and software products and technologies enable users to create, view, communicate and print electronic documents across platforms. The company licenses industry-standard Adobe PostScript™ software to over 40 leading computer and printer manufacturers worldwide. Retail products include Adobe Acrobat™, Adobe Illustrator™, Adobe Photoshop™, Adobe PageMaker™ and the Adobe Type Library.

<http://www.adobe.com/>

Apple Computer, Inc.



<http://www.apple.com>

If you want to learn more about the most innovative computer products in the world, start here: the Apple Computer Home Page. See what the future of computing might look like. See what you can get your hands on today. Topics, perspectives and stories change frequently, so visit today, visit often.

CD-NOW



<http://cdnow.com/macworld>

CDNow is the Web's most popular music retailer and information source. We offer more than 165,000 domestic and imported CDs, cassettes, T-shirts, videos, and laserdisks. No other music store comes close to our selection, customer service, and information resources. Point your Web browser to CDNow and experience the biggest and best record store in the world.

DirectWare



<http://www.directware.com>

DirectWare is your source for the computer industry's best computer hardware and software products at everyday low prices. DirectWare's web page allows users to browse the catalog, view weekly specials and contests, leave email messages, order a personal copy of the current catalog and download free Windows and Mac software. The key word search feature allows users to find the product they're looking for. 1-800-490-WARE. The #1 source for electronic commerce.

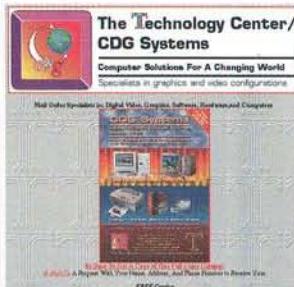
Agfa



<http://www.agfahome.com>

The Agfa Web site features debates on topical issues, interviews with industry experts, and user forums. Designers, desktop publishers, and other graphics professionals will find the latest information on Agfa scanners, digital cameras, color management software, type, proofing systems, RIPs, servers, screening technologies, imagersetters, digital printing systems and more.

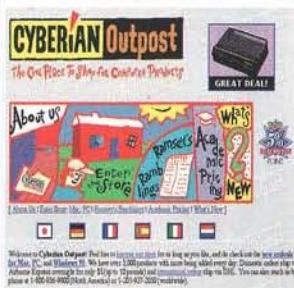
CDG Systems/The Technology Center



<http://www.peganet.com/cdgsys/cdg.html>

CDG Systems supplies computer solutions to graphic artists, publishers, multimedia producers and MIS managers all over the world. Our Sales Consultants are not just glorified order-takers; they truly know their fields, and can guide you to the best solutions. Browse our web site for a small sampling of our more than 28,000 Macintosh and PC products. Then order our catalog by E-mail at cdg@peganet.com, or by phone at (800) 741-6227. Let us find a solution for you.

Cyberian Outpost



<http://www.cybout.com/mw.html>

Cyberian Outpost is the definitive Web computer store, offering software, CPUs, accessories and peripherals at great prices with overnight delivery. We have information on thousands of Mac products - including reviews, screenshots and product demos. Our What's New page gets updated daily. International orders are welcomed.

IDG Books Worldwide, Inc.



<http://www.idgbooks.com>

- "Free & Downloadable" section
- Helpful "Tip of the Day"
- An online bookshelf worth checking out!

IDG Books Worldwide publishes high-quality computer and business books that bring extra value and skill-building instruction to readers of all levels. IDG Books has a higher ratio of bestsellers to books published than any other technology publisher. Some of our popular series include ...For Dummies® books and Macworld® Press titles.

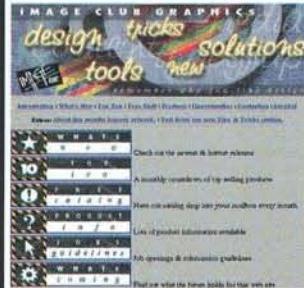
Web Watch

YOUR MARKET RESOURCE TO THE WORLD WIDE WEB

Macworld



Image Club Graphics



Visit Image Club's site for all your graphic design needs and more. You'll find their fresh collection of fonts, clip art and stock photos are versatile, well designed and lots of fun to use. With an easy to follow tips & tricks section and a constant supply of new exclusive and brand name products, you'll have access to all the tools you need to create innovative design.

<http://www.adobe.com/imageclub/>

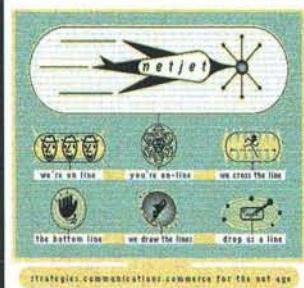
MacLinq



Utopia for Macs on the Web! Thousands of links to Mac resources, including: Shopping, FTP software downloading, Magazines & E'zines, Books & Reference, Hardware & Software, Services, User Groups, free classifieds, and software reviews! Need to find a Mac-related company? Our vendor Website Directory lists over 270 companies! Enter to win The Ultimate System: a Radius clone with thousands of dollars in peripherals and software. Mac companies: save time and money, let us create your Web site!

<http://www.maclinq.com/>

NetJet



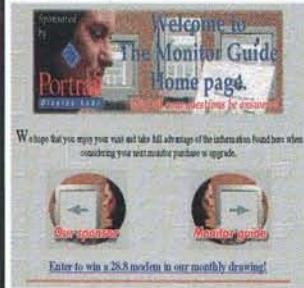
Exciting, compelling and breathtaking are just some of the words people use to rave about our clients' web sites.

NetJet Communications builds web sites for today's innovative companies. We use the latest technologies, such as commerce servers and Hot Java, to help our clients conduct business on the Internet in the Net Age.

For more information, visit our Web site or call us at (415) 626-4800.

<http://www.netjet.com/>

Portrait Display Labs, Inc.



If you're in the market for a new display, the Monitor Guide from Portrait Display Labs, makers of the Pivot 1700, is a great place to start. You'll find lots of information about getting the most out of your monitor, about which displays are the best for the applications you most frequently use, as well as what ergonomics and safety features to look for when making your purchase. And, you can even win a 28.8 modem in our monthly drawing!

<http://www.portrait.com>

Impossible Software



<http://www.impossible.com/>

Learn about the latest in Macintosh font management tools, tips and techniques by exploring the features of TypeTamer™ on Impossible Software's Web Pages. You will find answers to many font related FAQs, be able to download a trial version of TypeTamer™ and communicate with Impossible Software's Support Staff. See you on the web! 1-800-470-4801.

Macworld Online



<http://www.macworld.com>

- A year's worth of Macworld in searchable format;
- Lively message boards full of tips, advice, and commentary from editors, authors and readers;
- A first-rate software library stocked with the best in Macintosh-related software and freeware;
- NetSmart, a glossary and compendium of Web-related tutorials, hints, and links;
- TechnoCultural Cafe, a nexus for the more creative side of digital living.

OnBase Technology



<http://www.onbasetech.com>

DragNet is the Ultimate Net Address Book for managing all your Internet bookmarks. DragNet is designed to extend the functionality of traditional bookmark manager, creating an Internet database manager & address book that works in tandem with any web browser. Download your FREE trial copy today. Email: onbase@deltanet.com. 1-714-830-5682.

The Software Source



<http://iaswww.com/source.html>

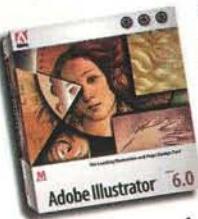
The Software Source Co., Inc. is a leading retailer of software and hardware on the Web. We offer discounts to students, teachers and schools on products by all major manufacturers. The discounts range from 30% - 80% off retail prices. Visit our site today and receive our free catalogue or to browse our complete product listing. You can even order online! 1-800-289-3275.

Your ability to perform wonders just got a boost. Now the leading illustration and page design program for

Macintosh® offers the highest quality TIFF and other file format support of any illustration program.

And boy! Look at these killer features. You can drag and drop images from Adobe™ Photoshop™ right into the application; turn your Adobe Illustrator™

artwork into raster images and apply Photoshop™ filters; and edit and colorize 1 bit TIFF images. And you can run a full array of plug-ins for Adobe Illustrator and Photoshop. Now you can even drag and drop the logo you've created into Adobe PageMill™ to start building your web site today. You also get a CD-ROM with 300 Type 1 fonts, Adobe Dimensions™ 2.0, 48 Gallery Effects™ filters, Adobe Screen Ready™, QuickTime™ tips and techniques, and more. Upgrade to the new Adobe Illustrator 6.0. Then turn your own genius loose. Call us at 1-800-521-1976, Ext. L1271 for more information or visit our web site at <http://www.adobe.com/>.



WONDER BOY



If you can *dream* it, you can *do* it.™

Adobe, the Adobe logo, Adobe Illustrator, Adobe Photoshop, Adobe Dimensions, Gallery Effects, and the tagline, "If you can dream it, you can do it" are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective companies. ©1996 Adobe Systems Incorporated. All rights reserved.

Macworld

Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.

Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
79	Adaptec	—	800/804-8896	110	InfoSeek	47	—	184	ProDirect	135	800/524-9952
68	Agfa	158	800/685-4271	158	Inspiration Software	—	800/877-4292	99	QMS	288	800/392-7559
14	Agio	—	800/688-2446	15	Intuit - Quick Books	—	800/781-6999	14	Reply Corporation	—	800/801-6898
176,177	Alliance Peripheral Systems	62	800/874-1428	175	J&R Computerworld	282	800/221-8180	81	Seiko Instruments	93	800/888-0817
119	Alsoft	140	800/257-6381	157	Kaetron Software	67	800/938-8900	49	Specular International	41	800/433-7732
100,101	American Power Conversion	72	800/788-2208	BC	Kensington Microware Ltd.	1	800/535-4242	35	SPSS INC.	85	800/457-8287
8	Anthro	—	800/325-3841	83	Kingston Technology	201	800/435-0677	65	Supra/Diamond Multimedia	83	800/967-8772
30,31	Apple Computer—Internet Web Servers	—	—	209	L.A.Trade	—	800/433-3726	71	Tektronix	143	800/835-6100
199	BottomLine Distribution/DGR Technologies	63	800/990-5792	185-187	LaCie	52	800/999-1353	122	usrEZ Software	36	800/482-4MAC
11	Caere Corporation	69	800/535-SCAN	136	LaserMaster	103	800/477-7714	6	ViewSonic	59	800/888-8583
132	Casady and Greene	58	800/359-4920	84	Lind/Pilot Technologies	10	800/897-8996	13	Visioneer	18	800/787-7007
85	Claris	—	—	74	Lotus Development Co	14	—	10	VST Power Systems	73	508/287-4600
178,179	ClubMac	96	800/CLUBMAC	9	Luckman Interactive	65	800/711-2676	118	World Software	145	800/225-9299
193-195	Computer Discount Warehouse	2	800/861-4CDW	204,205	Mac Bargains	70	800/619-9091	113	Xante Corporation	112	800/926-8839
78	Connectix - RAM Doubler	192	800/839-3629	211	Mac Preferred	76	—	10	Xaos Tools	13	800/BUY-XAOS
80	Connectix - Speed Doubler	193	800/839-3629	188,189	Mac Zone	71	800/436-0606	53	Xerox Corporation	100	800/ASK-XEROX
82	Connectix - QuickCAM	191	800/839-3629	123	MacAcademy	106	800/527-1914	115	AllPen Software, Inc.	21	—
34	Corel Corporation	78	800/836-3729	210	MacAcademy	107	800/527-1914	N7	Apple Computer, Inc.	—	—
202,203	CRA Systems Inc.	20	800/375-9000	180,181	MacConnection	—	800/800-3333	N13	Apple Computer, Inc.	23	—
37	Dantz Development	26	800/225-4880	196,197	MacMall	131	800/222-2808	N11	Education Research Labs, Inc.	27	—
124	DayStar Digital	7	800/532-7853	212	MacMarket	258	800/223-4622	N15	HealthCare Communications, Inc.	29	—
22	Deneba Software	—	800/733-6322	116,117	Macromedia - FreeHand	244	800/326-2128	N14	LandWare, Inc.	30	—
23	Deneba Software	57	800/733-6322	44	MacTemps	60	800/MACTEMPS	N18	Now Software	31	—
198	DigiCore	269	800/858-4622	200,201	MacWarehouse	150	800/255-6227	N15	PelicanWare, Inc.	28	—
206,207	DirectWare	88	800/490-WARE	114	Macworld Active Buyer Days	—	—	N2	Pen Ultimate	32	—
73	Eastman Kodak	45	800/344-0006	156	Macworld Expo	—	617/361-8000	N17	Physix, Inc.	34	—
251	Educorp	157	800/843-9497	208	MegaHaus	245	800/786-1184	N17	Pinehill Softworks	35	—
166	Engineered Software	12	910/299-4843	20	MetaTools, Inc.	4	805/566-6200	N16	Shana Corporation	37	—
24,25	Epson America	—	800/BUY-EPSON	29	MetaTools, Inc.	5	805/566-6200	N9	Wright Strategies	39	—
182,183	Express Direct	81	800/765-0020	28	Microfield Graphics	48	800/334-4922	18	Macworld	171	April 1996
18	Fractal Design	—	800/647-7443	IFC,1	MicroSoft - Office	—	800/531-6748	19	Macworld	172	May 1996
26	Graphsoft	46	410/290-5114	16,17	Microsoft - Word	—	800/531-6748	20	Macworld	173	June 1996
76	GT Interactive Software	184	212/726-6500	IBC	NEC Technologies	16	800/NEC-INFO	21	Macworld	174	July 1996
43	Hewlett Packard—DesignJet line	11	800/354-7622	165	Now Software	38	800/274-2899	22	Macworld	175	August 1996
120	Hitachi NSA	74	800/441-4832	12	Orange Micro	33	714/779-2772	23	Macworld	176	September 1996
167	IDG Books Worldwide	—	800/762-2974	21	Pinnacle Micro	115	800/553-7070	24	Macworld	177	October 1996
				32	Polaroid	295	800/816-2611	25	Macworld	178	November 1996
				36	Portrait Display Lab	89	800/858-7744	26	Macworld	179	December 1996
				2,3	Power Computing Corporation	161	800/410-7693	27	Macworld	180	January 1997

SUPPLEMENTAL NEWTON SECTION

N5	AllPen Software, Inc.	21	—
N7	Apple Computer, Inc.	—	—
N13	Apple Computer, Inc.	23	—
N11	Education Research Labs, Inc.	27	—
N15	HealthCare Communications, Inc.	29	—
N14	LandWare, Inc.	30	—
N18	Now Software	31	—
N15	PelicanWare, Inc.	28	—
N2	Pen Ultimate	32	—
N17	Physix, Inc.	34	—
N17	Pinehill Softworks	35	—
N16	Shana Corporation	37	—
N9	Wright Strategies	39	—

Macworld

Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
SOFTWARE											
BUSINESS											
158	Inspiration Software	—	110	InfoSeek	47	199	BottomLine Distribution/ DGR Technologies	63	ACCESSORIES		
15	Intuit - Quick Books	—	9	Luckman Interactive	65	178,179	ClubMac	96	FURNITURE		
157	Kaetron Software	67	PERSONAL			83	Kingston Technology	201	8	Anthro	—
IFC,1	MicroSoft - Office	—	15	Intuit - Quick Books	—	208	MegaHaus	245	MISCELLANEOUS		
16,17	Microsoft - Word	—	SECURITY			21	Pinnacle Micro	115	28	Microfield Graphics	48
165	Now Software	38	122	usrEZ Software	36	184	ProDirect	135	MAIL ORDER		
CAD/CAM											
166	Engineered Software	12	STATISTICAL			73	Eastman Kodak	45	176,177	Alliance Peripheral Systems	62
26	Graphsoft	46	35	SPSS INC.	85	BC	Kensington Microware Ltd.	1	199	BottomLine Distribution/ DGR Technologies	63
CD ROM											
34	Corel Corporation	78	UTILITIES			28	Microfield Graphics	48	178,179	ClubMac	96
251	Educorp	157	132	Casady and Greene	58	13	Visioneer	18	193-195	Computer Discount Warehouse	2
COMMUNICATION											
74	Lotus Development Co	14	WORD PROCESSING			100,101	American Power Conversion	72	198	DigiCore	269
DATA MANAGEMENT											
85	Claris	—	118	World Software	145	50	Wacom Technology Corporation	146	206,207	DirectWare	88
DIGITIZERS/SCANNERS											
68	Agfa	158	HARDWARE			65	Supra/Diamond Multimedia	83	182,183	Express Direct	81
ENTERTAINMENT											
34	Corel Corporation	78	BOARDS			180,181	J&R Computerworld	282	175	MacConnection	—
76	GT Interactive Software	184	79	Adaptec	—	196,197	MacMall	131	209	L.A.Trade	—
FONTS											
119	Alsoft	140	CD ROM			212	MacMarket	258	185-187	LaCie	52
GRAPHICS/DTP											
119	Alsoft	140	COMPUTER SYSTEMS			200,201	MacWare ⁺ ,use	150	204,205	Mac Bargains	70
22	Deneba Software	—	202,203	CRA Systems Inc.	20	208	MacZone	71	188,189	Mac Zone	71
23	Deneba Software	57	182,183	Express Direct	81	190,191	MacConnection	—	190,191	MacMall	131
18	Fractal Design	—	2,3	Power Computing Corporation	161	212	MacMarket	258	200,201	MacWare ⁺ ,use	150
157	Kaetron Software	67	190	Westwood Computers	101	208	MacWare ⁺ ,use	245	208	MacZone	71
116,117	Macromedia - FreeHand	244	DISPLAY			184	ProDirect	135	184	MacZone	71
20	MetaTools, Inc.	4	202,203	CRA Systems Inc.	20	190,191	Westwood Computers	101	190	Westwood Computers	101
29	MetaTools, Inc.	5	120	Hitachi NSA	74	24.25	Epson America	—	204,205	MacZone	71
49	Specular International	41	IBC	NEC Technologies	16	43	Hewlett Packard— DesignJet line	11	188,189	MacZone	71
10	Xaos Tools	13	32	Polaroid	295	136	LaserMaster	103	190,191	MacConnection	—
MISCELLANEOUS											
158	Inspiration Software	—	EXPANSIONS/UPGRADES			99	QMS	288	196,197	MacMall	131
53	Xerox Corporation	100	209	L.A.Trade	—	81	Seiko Instruments	93	212	MacMarket	258
MULTIMEDIA											
116,117	Macromedia - FreeHand	244	124	DayStar Digital	7	71	Tektronix	143	200,201	MacWare ⁺ ,use	150
OCR			FURNITURE			113	Xante Corporation	112	208	MacZone	71
11	Caere Corporation	69	14	Agio	—	SECURITY	103	184	MacZone	71	
HARD DISKS/STORAGE											
TRADESHOWS/CONFERENCES											
SERVICES											
MISCELLANEOUS											
158	Inspiration Software	—	44	MacTemps	60	100,101	American Power Conversion	72	208	MacZone	71
53	Xerox Corporation	100	209	L.A.Trade	—	82	Connectix - QuickCAM	191	190,191	MacConnection	—
TRAINING											
NEWTON											
HARDWARE											
N13	Apple Computer, Inc.	—	N13	Apple Computer, Inc.	—	N18	Now Software	31	N13	Apple Computer, Inc.	23
N7	Apple Computer, Inc.	—	N7	Apple Computer, Inc.	—	N18	Now Software	31	N7	Apple Computer, Inc.	—
SOFTWARE											
N5	AllPen Software, Inc.	—	N5	AllPen Software, Inc.	—	N11	Education Research Labs, Inc.	27	N5	AllPen Software, Inc.	21
N11	Education Research Labs, Inc.	—	N11	Education Research Labs, Inc.	—	N15	HealthCare Communications, Inc.	29	N11	Education Research Labs, Inc.	27
N15	HealthCare Communications, Inc.	—	N15	HealthCare Communications, Inc.	—	N14	LandWare, Inc.	30	N15	HealthCare Communications, Inc.	29
N14	LandWare, Inc.	—	N14	LandWare, Inc.	—	N15	PelicanWare, Inc.	28	N14	LandWare, Inc.	30
N17	Pinehill Softworks	—	N17	Pinehill Softworks	—	N2	Pen Ultimate	32	N17	Pinehill Softworks	35
N16	Shana Corporation	—	N16	Shana Corporation	—	N17	Physix, Inc.	34	N16	Shana Corporation	37
N9	Wright Strategies	—	N9	Wright Strategies	—	N18	Wright Strategies	39	N9	Wright Strategies	39

One Of America's Largest Authorized Apple Dealers

J&R COMPUTER WORLD



Fargo FotoFUN! Digital Color Photo Printer

• Print real color photos from your computer with color and clarity as good as that of traditional snapshots • Make your own photo postcards, up to 4" x 6" • Create personalized photo mugs

\$399.99 (FAA 53002)
Fargo FotoFUN! Print Film Kit
• Includes ribbon & film for 36 prints (FAA 53050).....**\$34.99**

iomega Zip™ Drive

- Unlimited storage on inexpensive 100MB disks
- Portability and easy plug-and-play set-up
- Comes with a SCSI cable and one 100MB removable disk

\$199.99 (BER ZIP100SCSI)
Extra 100MB Cartridge (BER MAC100MBDSK). **\$19.99**

iomega Jaz™ Drive

- Provides 1GB of disk space on each compact cartridge
- Portable—goes where you go
- Auto-termination makes setup simple
- Includes one cartridge

\$599.99 (BER JAZEXTSCSI)
Extra 1GIG Cartridge (BER MAC1GIGCART). **\$124.99**

Panasonic PowerDrive2 External Optical Disk/CD-ROM Drive

- Backup storage reads & writes like a hard drive
- 650MB capacity
- 4x-speed CD-ROM drive
- For PC & Macintosh
- Includes 1 optical disk, SCSI cable & driver

\$649.99 (PAN LF1000AB)
Extra 650MB Cartridge (PAN LMR650A). **\$59.99**

Software

BUSINESS

Connectix RamDoubler-Mac/PowerMac (CNM RAMDOUBL-MP)	.....\$54.95
Symantec Norton Utilities 3.2-Mac/PowerMac (SMM NORTON3.2)	.....\$89.95
Intuit Quicken 6.0 (IUM QUICKEN6)	.....\$49.95
Microsoft Office 4.21-Mac/PowerMac (MSM OFFICE4.21)	.....\$449.95
Nisus Writer 4.1 with Language Key (NSM WRITER+LK)	.....\$199.95
Caere OmniPage Direct 2.0 (COM OMNIDIRECT2)	.....\$59.95
Ventanna Internet Membership Kit 2.0 (VNM INTERNET2)	.....\$44.95
Apple System 7.5-Mac/PowerMac (APP M2920LL)-Floppy (APP M2925LL)-CD	.....\$89.95

HSC KPT Vector Effects-Mac/PowerMac (HSM KPTVECTOR)	.....\$119.95
Quark Xpress 3.3-PowerMac Only (QUM QUARKPM-CJ-CD)	.....\$649.95
Edutainment	
Spectrum Tetris Gold (SHI TETRISGLD-CJ-CD)	.....\$24.95
Mindscape Mavis Beacon Teaches Typing (MDM MAVISTYPING)	.....\$29.95
Corel All Movie Guide (CRB ALLMOVIE-CJ-CD)	.....\$19.95
Voyager Amnesty Interactive (VOI AMNESTY-CJ-CD)	.....\$12.95
Comptons Interactive Encyclopedia 1995 (BTM CIE-CJ-CD)	.....\$44.95
Lucas Film Dark Forces (LFM DARKFORCE-CJ-CD)	.....\$49.95
Discovery Nile Passage to Egypt (DCA NILE-CJ-CD)	.....\$29.95
GT Interactive Doom 2 (GTA DOOM2)-Floppy (GTA DOOM2-CJ-CD)	.....\$44.95
Maxis SIMCity 2000 (MM SIMCITY2K)	.....\$39.95

Visioneer PaperPort Vx

• The easiest way to file, fax, edit or copy a document • Direct links to hundreds of today's most popular software • 256 grayscale imaging • Includes OmniPage LITE OCR, CardScan SE business card reader and PictureWorks Copier software, cable and power supply

\$299.99 (VIR PAPERVXMAC)

Global Village PowerPort Platinum™ Pro Fax/Modem & Ethernet Adapter PC Card

- 28,800 bps data/14,400 bps fax speed
- GlobalFax, GlobalFax OCR & PC Card Enhanced software
- For PowerBook 190/5300 series

\$499.99 (GLV POWRPLPRO)
Without Ethernet Adapter (GLV PCMCIAPITM) **\$399.99**

Global Village TelePort Platinum™ 28,800 BPS External Data/Fax Modem

- Send & receive data up to 28,800 bps
- V.34 standard
- Includes GlobalFax™, GlobalFax™ OCR & Data communications software
- For Macintosh desktops

\$199.99 (GLV TELEPRPLN)

TDK DF2814 V.34 Data Fax PCMCIA Modem For Apple PowerBook

- Full-features, ultra high speed PCMCIA data/fax modem with internal DAA phone line interface
- 28.8 Kbps data, 14.4 fax
- Cellular ready
- MNP 10
- Advanced Parallel Technology™
- 5-year warranty

\$249.99 (TDK DF2814APB)

Kodak Digital Camera 40

- Produces high-quality, low-cost pictures
- 24-bit color and 756 x 504-pixel resolution
- Optional exposure control for tricky lighting
- 4MB internal memory
- PhotoEnhancer software from Picture Works
- TWAIN acquire software

\$699.99 (KOD DC40)

Hewlett-Packard DeskWriter 600

- Inkjet printer has new ink formulation which provides clearer and crisper blacks and brighter colors (with optional color kit)
- 600 dpi resolution
- Resolution Enhancement Technology
- Prints on 4 x 6" up to 8.5 x 14" paper
- Up to 4 ppm B/W, 1 ppm color

\$249.99 (HP C2185A)

Hewlett-Packard ScanJet 340CM

- 600 x 300 dpi black printing
- 3ppm
- Includes color kit and HP ColorSmart technology
- Gives you vibrant color at the touch of a button
- Includes Macintosh adapter and 30-page sheet feeder
- Lightweight, fits in briefcase

\$349.99 (HP C2663A)

Hewlett-Packard ScanJet 4c Color/Grayscale Scanner

- 600 dpi optical resolution, 2400dpi enhanced
- Easy-to-use
- Ideal for word processing, desktop publishing, OCR, E-mail, E-fax & copying
- Interface & Caere OmniPage LE OCR

\$979.99 (HP C2529B)

To Order Toll Free and Receive a Free Catalogue
800-221-8180
 24 Hours A Day, 7 Days A Week, Anywhere In The USA

MAIL ORDERS: J&R Computer World Dept. MW0496

• 59-50 Queens Midtown Expressway • Maspeth, Queens NY 11378

CALL 1-800-221-8180 for shipping information. DO NOT SEND CASH.

FAX us at: 1-800-232-4432

Not responsible for typographical or pictorial errors. Some quantities may be limited. All merchandise brand new, factory fresh and 100% guaranteed!



J&R COMPUTER WORLD

Apple® PowerBook® 5300 100MHz +8MB RAM +500MB Hard Drive \$2199.95

Apple® Power Macintosh® 8500 +120MHz +2 Gig Hard Drive +16MB RAM +Quad Speed CD-ROM \$4499.95

Call Now and Order 1-800-221-8180



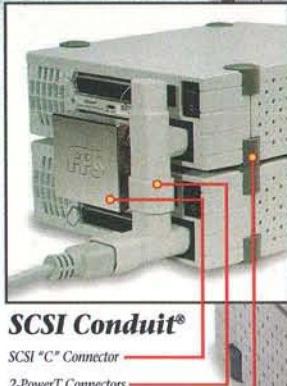
Technologies

STORE A LOT! 2GB STORAGE FOR ONLY

\$499.95

Internal configuration

GREAT PRODUCTS... PRICELESS SUPPORT



SCSI Conduit®

SCSI "C" Connector

2-PowerT Connectors

4-stacking feet

\$29.95

only

Mini SCSI Link (12" cable) \$19.95

**APS I 2160**

- ✓ Your best value for enhanced performance and capacity
- ✓ Average seek time of 8ms
- ✓ Over 2060MB Formatted capacity
- ✓ Media transfer rate 47.4 – 71.6 Mbits/sec

With high-performance, superior reliability, and exceptional value, the new APS I 2160 is an attractive choice as your next workstation or server drive. Its 2063MB formatted capacity, IBM drive technology and 800,000 hour MTBF fit the rigorous demands of many applications ranging from database and spreadsheet use to desktop publishing and imaging.

APS DESKTOP DRIVES				
Model	Capacity	Awards	Internal	SR2000
APS Q 840	811MB	LABS 4½	\$199.95	\$299.95
Quantum 840 Trailblazer				
APS I 1080	1034MB		239.95	339.95
IBM DPES 31080				
APS Q 1080	1042MB	LABS 4½ MacWEEK 4½	269.95	349.95
Quantum 1080 Fireball				
APS Q 1280	1222MB		299.95	399.95
Quantum Fireball II 1280				
APS I 2160	2063MB		499.95	599.95
IBM Ultrastar ES				
APS MS 2000	2000MB		549.95	649.95
Microdrive 4421				
APS Q 2210	2100MB	LABS 4½	629.95	729.95
Quantum Capella VP32210				
APS ST 4200	4094MB	LABS 4½	899.95	999.95
Seagate ST 15230N				

APS I 1080

- ✓ Over 1GB capacity with Fast SCSI-2 interface
- ✓ IBM Magneto-Resistive (MR) head technology
- ✓ Enhanced power management
- ✓ 3-year warranty

\$239.95

APS HIGH-PERFORMANCE DRIVES

Model	Capacity	Awards	Internal	SR2000
APS MS 2.0	1955MB	LABS 4½	\$599.95	\$699.95
Micropolis 4221				
Fast/Wide or AV versions are available for an additional \$100.00				
APS Q 2.0	2050MB	LABS 4½	799.95	899.95
Quantum Atlas XP32150				
Fast/Wide version is available for an additional \$100.00				
APS ST 2.0	2047MB		799.95	899.95
Seagate ST 32550N Barracuda				
APS MS 4.0	4064MB	LABS 4½	999.95	1099.95
Micropolis 3243				
Fast/Wide or AV versions are available for an additional \$100.00				
APS ST 4.0	4094MB	LABS 4½	1199.95	1299.95
Seagate ST 15150N				
APS Q 4.0	4101MB	MacWEEK 4½	1199.95	1299.95
Quantum Atlas XP34300				
Fast/Wide version is available for an additional \$100.00				

SCSI POWERBOOK DRIVES

Model	Capacity/Features	Drive Type	Internal
APS I 810	810MB	Fast SCSI-2	\$499.95
IBM Travelstar XP	4900 rpm		
APS I 1.2	1215MB	Fast SCSI-2	699.95
IBM Travelstar XP	4900 rpm		

IDE POWERBOOK DRIVES

Model	Capacity/Features	Drive Type	Internal
APS Q 810	810MB	Fast ATA2	\$399.95
Quantum Europa	3800 rpm		
APS PB 170	170MB	Each cart 4½ Removable cartridge	399.95
Avatar mechanism			
APS Q 1.08	1037MB	Fast ATA2	499.95
Quantum Europa	3800 rpm		

CALL FOR YOUR**FREE**

Early Spring 1996

CATALOGFeaturing Our Complete line of
APS Drives, Supplies & Accessories

- 30-day money-back guarantee on all APS brand products. Your risk is the cost of shipping.
- Drive-for-Drive Repair or Replacement Warranty. The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- Refused orders subject to 20% restocking fee.
- Listed capacities are formatted.
- Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.
- Prices and specifications are subject to change without notice.
- Not responsible for typographical errors.
- Copyright © 1996 APS Technologies



MW ★★★★

MacWEEK

**APS TECHNOLOGIES**

BACKUP FAST! STAY OUT OF TROUBLE!

APS HyperDAT

- ✓ The performance leader in DAT backup
- ✓ High-capacity DDS-2 backups – up to 8GB on a single 120m tape with hardware compression
- ✓ High-speed backup – up to 28MB per minute
- ✓ Includes the latest Retrospect backup software – Free

Delivering backup speeds as high as 28MB per minute, this DDS-2 backup system can pack up to an incredible 8GB on a single 120m DAT tape! Setting the standard for high-capacity, high-speed backup, the APS HyperDAT can also use 60 and 90m tapes, either new or as written by other DDS-1 or DDS-2 compatible drives. Perfect for office and network backup and archive!



\$899.95

External configuration
New Low Price!

APS DAT

- ✓ The value leader in DAT backup
- ✓ Twice the speed of standard DAT – up to 19MB per minute
- ✓ Includes the latest 3.0 Retrospect backup software – Free
- ✓ 2GB native capacity on 90m DAT tapes – more with software data compression

\$699.95

External configuration

Your best value in DAT technology is the new APS DAT. It can pack up to 2GB of uncompressed data on a 90m DAT tape at a fast 19MB per minute – that's twice as fast as a standard DAT drive. It is especially well-suited to digital video and multimedia backups that don't require hardware data compression, as well as any situation where backup speed and capacity are a must.


MacWorld Magazine
World Class Award

MacUser Editor's
Choice Award

Computerworld
Choice Award

APS TAPE DRIVES				
Model	Capacity	Awards	Internal	SR2000
APS HyperQIC	2GB	L.A.B.S. MacWEEK \$449.95	N/A	\$499.95
QIC 3080 Mechanism				
APS DAT	2GB	\$649.95	699.95	
DDS-1 Non-Compression Mechanism				
APS HyperDAT	8GB	849.95	899.95	
DDS-2 Compression Mechanism				
APS HyperDAT Pro	8GB	1049.95	1099.95	
DDS-2 High Speed Mechanism				
APS DAT Louder600	48GB		2499.95	
Ideal for unattended large network backups				
APS DLT30	30GB	MACWEEK \$449.95	N/A	4499.95
Digital Linear Tape Mechanism				
APS DLT40	40GB		N/A	5999.95
Digital Linear Tape Mechanism				
APS DLT4500 Loader	200GB		N/A	9999.95
Digital Linear Tape Mechanism				
APS DLT4700 Loader	280GB		N/A	11499.95
Digital Linear Tape Mechanism				

APS MO DRIVES			
Model	Awards	SR2000	
APS 230MB MO		\$399.95	
APS 1.3GB MO	4MB Cache	1699.95	
OPTICAL JUKEBOX	Up to 26GB of reliable MO storage	9999.95	

APS CD-ROM DRIVES			
Model	Awards	Internal	SR2000
APS T 3701	6.7X-speed CD-ROM		\$399.95 \$449.95
APS PD4	Optical storage with 4X CD-ROM in one device	N/A	599.95
APS CD-R	Recordable CD-ROM	N/A	999.95

APS SYQUEST DRIVES				
Model	Capacity	Awards	Internal	SR2000
EZ135	135MB		N/A	\$229.95
APS SQ 5200	194MB	L.A.B.S. TECHNICAL \$339	389.95	
APS SQ 3270	255MB	L.A.B.S. \$349.95	N/A	349.95

ZIP?, EZ? WHO CARES! GET 270MB OF FAST SYQUEST STORAGE FOR ONLY \$329.95*

SyQuest®
APS SQ 3270

- ✓ Uses 105MB & 270MB cartridges
- ✓ Perfect for desktop or laptop computers
- ✓ Delivers fixed platter drive performance
- ✓ 2-year warranty

* Only with the purchase of a SQ270MB Preformatted cartridge

Computerworld
Choice Award


SAVE TIME, SAVE \$\$\$
ON PREFORMATTED MACINTOSH
SYQUEST CARTRIDGES FROM APS

Our preformatted SyQuest cartridges have been formatted using the current version of APS PowerTools. They are also loaded with System 7.0.1 and a free copy of APS PowerTools.

SQ-400 (44MB)	42.00
SQ-800 (88MB)	47.00
SQ-310 (105MB)	54.00
SQ-327 (270MB)	60.00
SQ-2000 (200MB)	76.00



Visit our Web Page at <http://www.apstech.com/> International Sales: (816) 920-4109

800-874-1428

Call Us
24 HOURS A DAY,
7 DAYS A WEEK



Visa, MasterCard, Discover, American Express: No Surcharge
Same day shipping for personal checks (Restrictions apply)

Circle 62 on reader service card

APS
Technologies

REF. CODE:
286004

1-800-258-2622

1-800-CLUBMAC

1-800-258-2622

\$259

Internal Fireball C109 1202

FIREBALL 1GB

12ms Access Time

BEST BUY

Quantum LIGHTNING 730MB

11ms Access Time

Internal Lightning C109 1154

\$185

\$999

Quantum GRANDPRIX 4.3GB

7200 RPM

Internal Grand Prix C109 1159

BEST BUY

MacUser October 1995

\$359

ClubMac 200MB Removable

200MB

FEATURING SyQuest TECHNOLOGY

C109 1222

*Cartridge sold separately.

\$199.99

Iomega Zip Drive

IN STOCK

I044 1010

Features:
29ms Access Time
One Free Cartridge
One Year Warranty

100MB

iomega.

\$339

N024 1070

NEC

MultiSpin 4Xc
7 Disc Changer
Load 7 Discs at a time!

100MB

\$1299

0066 1003

OLYMPUS
OLYMPUS IMAGE SYSTEMS, INC.

DELTIS CD-R2
2X CD Recordable

Features:
1MB Buffer
Gear Software
One Year Warranty

Source Code 69046

ClubMac®

1-800-258-2622

CLUBMAC HARD DRIVES

Quantum

30MB Lightning Internal/External \$185/\$245

850MB TrailBlazer C109 1206/C109 1207 \$199/\$259

1080MB Fireball C109 1202/C109 1203 \$259/\$319

2200MB Capella C109 1213/C109 1212 \$669/\$729

4300MB Grand Prix C109 1159/C109 1108 \$999/\$1059

4300MB Atlas C109 1122/C109 1121 \$1139/\$1199

Seagate

2.4GB Hawk 2 LP ST3240N C109 2211/C109 2112 \$739/\$799

4.3GB Hawk 4 ST15230N C109 2212/C109 2113 \$999/\$1059

2.5GB Barracuda 2 LP ST32550N C109 2203/C109 2109 \$889/\$949

4.3GB Barracuda 4 ST15150N C109 2207/C109 2106 \$1259/\$1319

5.25" Full Height

9.1GB Elite 9 ST410800N S020 1014/C109 2110 \$2199/\$2299

CLUBMAC 2.5" HARD DRIVES

Quantum

341MB Daytona Internal/External \$179/\$299

514MB Daytona Q030 1041/C109 1119 \$219/\$339

810MB Europa IDE C109 1022 \$429 Internal

1080MB Europa IDE C109 1023 \$475 Internal

CLUBMAC FAST AND WIDE DRIVES

Seagate

2.1GB Barracuda 2LP ST32150W C109 2214/C109 2215 \$959/\$1059

4.3GB Barracuda 4 ST15150W C109 2206/C109 2208 \$1319/\$1419

9.1GB Elite 9 ST410800W C109 2220/C109 2222 \$2379/\$2499

Quantum

2.2GB Capella VP322105W C109 2219/C109 2217 \$699/\$799

4.3GB Grand Prix XP34301SW C109 2216/C109 221 \$1029/\$1129

FAST AND WIDE SCSI CONTROLLERS

Adaptec

A024 1006 PowerDomain AHA 2940W SCSI Accelerator \$299

A029 1001 Adaptec Remus 1.3 (Raid Levels 1, 4, 5) \$439

FWB incorporated

F094 1033 SCSI JackHammer PCI \$389

F094 1002 SCSI JackHammer NuBus \$459

QLogic

Q010 1008 Fast SCSI MAC PCI-F 10 MB/sec connectivity \$229

Q010 1009 Fast SCSI MAC PCI-W Fast/Wide SCSI (20 MB/sec) connectivity \$295

Q010 1010 Fast SCSI MAC PCI-D Fast/Wide SCSI requiring longer I/O cables \$449

CD-ROM READERS

NEC

N024 1062 MultiSpin 6Xe CD-ROM Reader 150ms 900/sec \$479

N024 1070 MultiSpin 4Xc 7 Disc Changer 350ms 600/sec \$339

N024 1011 MultiSpin 3Xp plus CD-ROM Reader 240ms 500/sec \$379

ClubMac®

C109 9700 ClubMac 2X 7 Disc CD-ROM Changer 350ms 300/sec \$149

C109 9555 ClubMac Six-Speed CD-ROM Drive 145ms 900/sec \$369

C109 9546 ClubMac Quad-Speed CD-ROM Drive 140ms 600/sec \$199

C109 9550 ClubMac Dual-Speed CD-ROM Drive 350ms 300/sec \$88*

7 Hammond, Irvine CA 92718

• ClubMac hard drives include all cables, cords, lob, and brackets necessary for use with the Macintosh you specify. ClubMac formats off hard drives and installs Apple System 7.1 software, Chromatic Audio drivers and PowerBook drivers.

• External drives include a Double-Shielded, twisted pair 75-50 SCSI cable.

• ClubMac drives will be a double-shielded, twisted pair 75-50 SCSI cable.

• ClubMac drives will be a double-shielded, twisted pair 75-50 SCSI cable.

• All ClubMac hard drives include a 30 day money back guarantee. Your risk is the cost of shipping.

• WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused.

• ClubMac carries a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused.

• ClubMac carries a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused.

NO SURCHARGE!



Call Toll Free
1-800-258-2622

for a FREE Subscription to the ClubMac Catalog

REMOVABLE DRIVES

ClubMac

C109 1222 ClubMac 200MB 5.25" Removable \$359

C109 1221 ClubMac 88MB 5.25" Removable \$199

C109 1224 ClubMac 270MB 3.5" Removable \$375

C109 1223 ClubMac 105MB 3.5" Removable \$149

S198 2001 SyQuest EZ135 135MB 3.5" Removable \$234*

*Cartridge not included

SyQuest Media

Media	Qty 1	Qty 10	Qty 20
44MB	\$42ea	\$41ea	\$40ea
88MB	\$47ea	\$46ea	\$45ea
200MB	\$75ea	\$73ea	\$71ea
105MB	\$35ea	\$34.50ea	\$34ea
270MB	\$60ea	\$59ea	\$58ea
EZ135MB	\$23ea	\$22.50ea	\$22ea

Diomega

Item	Price
I044 1010 Zip drive with One 100MB cartridge	\$199.99
I040 1006 Zip Cartridge (100MB)	\$19.99
I040 1011 Zip Cartridge (3 pack)	\$49.95
I040 1010 Zip Cartridge (10 pack)	\$149.95

TAPE BACKUP

ClubMac

Shipped with Retrospect 3.0

Item	Price
C109 2042 ClubMac 2-4GB SCSI MiniCartridge Drive	\$499
C109 5039 ClubMac 2.0GB ThunderDAT Drive	\$749
C109 5000 ClubMac 4-8GB DDS-2 DAT Drive	\$899
C109 4301 ClubMac 4-8GB DDS-2 SuperDAT Drive	\$1199
C109 1236 ClubMac 40GB DLT Subsystem DLT 4000	\$5799
S100 1043 Sony QW3080XLF QIC/WIDE 2.4GB Cartridge	\$29
V010 1025 4mm 60 meter DAT Cartridge	\$9
V010 1018 4mm 90 meter DAT Cartridge	\$11
V010 1043 4mm 120 meter DAT Cartridge	\$24
Q034 1022 1/2 inch media for DLT 4000	\$99

OPTICAL DRIVES

ClubMac

Item	Price
C109 5022 ClubMac 5.25" Olympus 1.3GB Optical	\$1399
C109 5020 ClubMac 3.5" Olympus 230MB Optical	\$459
V010 1012 3.5" 230MB 512 Bytes/Sector Optical Cartridge	\$26
V010 1020 5.25" 1.2GB 512 Bytes/Sector Optical Cartridge	\$59
V010 1021 5.25" 1.2GB 1024 Bytes/Sector Optical Cartridge	\$59

TORAY

Item	Price
T140 1001 TORAY Phasewriter DUAL™ PD	\$649
T140 2001 TORAY PDM-650 Media (ZCAV 650MB)	\$59

PINNACLE MICRO

Item	Price
P074 1005 Apex 4.6GB Optical 4X CD/650MB Optical	\$1589
P074 1006 Apex 4.6GB 1024K Media	\$189

CD RECORDABLE DRIVES

YAMAHA®

Item	Price
Y010 1002 Yamaha 4X CD Recorder w/Toast CD Mastering software	\$2799

PINNACLE MICRO

Item	Price
P074 1008 RCD-5020 Recordable CD System w/ Pinnacle software	\$1249
P074 1001 RCD-1000 Recordable CD System w/ Toast CD	\$1429

OLYMPUS

Item	Price
0066 1003 DELTIS CD-R2 2X CD Recordable w/ GEAR software	\$1299

ClubMacOffers the full line of
Apple ProductsAuthorized
Catalog Reseller**MONITORS****radius***

R016 1031	Radius PressView 17"SR Display System	\$1999
R016 1009	Radius Intellicolor Display/20e	\$1995
R016 1032	Radius PrecisionView 21 Display	\$2299
R016 1034	Radius PressView 21"SR Display System	\$3149

NEC

N026 1031	NEC 15" MultiSync XV15"	\$469
N026 1032	NEC 17" MultiSync XV17"	\$799
N026 1009	NEC 17" MultiSync XP17"	\$1049
N026 1010	NEC 21" MultiSync XE21"	\$1779
N026 1011	NEC 21" MultiSync XP21"	\$2159

SONY.

S106 1021	Sony Multiscan Trinitron 15SX-1	\$460
S106 1017	Sony Multiscan Trinitron 15SF-2	\$519
S106 1018	Sony Multiscan Trinitron 17SF-2	\$915
S106 1019	Sony Multiscan Trinitron 17SF-2T	\$1099
S106 1020	Sony Multiscan Trinitron 20SF-2	\$1855

Portrait

P026 1003	Portrait/Pivot 1700 .26 Dot Pitch	\$1049
P026 1004	Portrait/Pivot 1700 .28 Dot Pitch	\$989

MAG INNOVISION

M156 1004	Mag 15" Technitron DX15T Trinitron	\$459
M156 1005	Mag 17" Technitron DX17T Trinitron	\$799

PRINTERS**HEWLETT PACKARD**

H047 1030	HP LaserJet 5MP Laser Printer	\$1045
H047 1039	HP DeskWriter 600 InkJet Printer	\$299
H047 1033	HP DeskWriter 660C Inkjet Printer	\$399
H047 1041	HP DeskJet 850C InkJet Printer	\$515
H047 1042	HP DeskJet 1600CM/PS PostScript Printer	\$1985
H047 1047	HP DeskJet 340 InkJet Printer	\$299
H047 1048	HP Mac Adapter for DeskJet 340 InkJet Printer	\$29.95

EPSON

E047 1018	Epson Stylus Color II	\$449
E047 1019	Epson Stylus Color Pro	\$599
E047 1022	Epson Stylus Pro XL	\$1799

NEC

N027 1001	NEC SilentWriter Model 640	\$399
N027 1006	NEC SuperScript 3000M Color Dye-Sub	\$399

SCANNERS**EPSON**

E045 1003	Epson ES-1200C Pro-MAC Color Scanner	\$1179
E045 1013	Epson ES-1000C MAC Scanner	\$735

AGFA

A055 1011	Agfa StudioScan II	\$939
A055 1001	Agfa Arcus II	\$2195

HEWLETT PACKARD

H045 1013	HP ScanJet 4s Personal Scanner	\$299
H045 1009	HP ScanJet 4c Color/GS Scanner	\$949

MICROTEK

M150 1006	Microtek Scanmaker III	\$1989
M150 1026	Microtek Scanmaker E3	\$399

UMAX

U010 1052	Umax PowerLook II w/ Transparency Adapter	\$3395
U010 1053	Umax Vista-S8 LE w/ Transparency Adapter	\$799
U010 1038	Umax Vista-S8 Pro	\$769

U010 1010	Umax Vista-S6 LE	\$559
-----------	------------------	-------

General Sales 24 Hours a Day, 7 Days a Week (800) 258-2622

Inquiries and Int'l Sales Monday - Friday 5am - 9pm PST (714) 768-8130

Corporate/Educ Sales Monday - Friday 5am - 9pm PST (800) 258-2621

GRAPHIC CARDS**radius***

R013 1059	Radius Thunder IV GX 1600	\$1989
R013 1061	Radius Thunder IV GX 1152	\$1589
R013 1069	Radius PrecisionColor8/1600 PCI Card	\$479
R013 1070	Radius Thunder30/1152 PCI Card	\$799
R013 1071	Radius Thunder30/1600 PCI Card	\$1189
R013 1072	Radius ThunderColor 30/1152 PCI Card	\$1569
R013 1073	Radius ThunderColor 30/1600 PCI Card	\$1999
R013 1026	Radius Spigot Power AV	\$599
R013 1018	Radius VideoVision Studio 2.5.1	\$2399
R013 1077	Radius Telecast Upgrade for VideoVision	\$3429

ATI TECHNOLOGIES INC.

A143 1010	ATI XCLAIMGA 2MB PCI Graphics Card	\$359
A143 1009	ATI XCLAIMGA 4MB PCI Graphics Card	\$469

TRUEVISION

T043 1001	Targa 2000 (PCI Mac)	\$4295
-----------	----------------------	--------

INTEGRATED MICRO SOLUTIONS

I143 1001	IMS Twin Turbo 128M 4MB PCI	\$579
-----------	-----------------------------	-------

NUMBER NINE

N080 1003	Imagine 128 True 128bit 4MB PCI	\$869
-----------	---------------------------------	-------

GRAPHICS TABLETS**WACOM**

W010 1026	ArtPad II 4x5 w/Erasing Pen	\$139
W010 1028	ArtZ II 6x8 w/Erasing Pen	\$298
W010 1029	ArtZ II 12x12 w/Erasing Pen	\$425
W010 1030	ArtZ II 12x18 w/Erasing Pen	\$695
W010 1033	With Pointer 4.0	\$369
W010 1034	With Pointer 5.0	\$528
W010 1035	With Pointer 6.0	\$655
W010 1036	With Pointer 7.0	\$925

MODEMS**FAST MAC**

B030 1007	Fast Mac V.34 28.8 Fax/Data Modem	\$139
-----------	-----------------------------------	-------

BEST DATA

B202 1001	Best Data 2834FLXMAC 28.8 V.34 External Modem	\$158
B202 1003	Best Data 2834VLXMAC 28.8 V.34 External Modem w/Voice Mail	\$188

GLOBAL VILLAGE COMMUNICATION

G050 1006	TelePort Gold II	\$109
G050 1016	TelePort Platinum	\$199
G050 1002	PowerPort Mercury for PB 5xx	\$325
G050 1019	PCMCIA 28.8Kbps Fax/Data/10BaseT Ethernet	\$499
G050 1020	PowerPort Platinum PCMCIA Card 28.8Kbps Fax/Data	\$339

Megahertz

M070 1021	28.8Kbps PC Card modem w/XJACK®	\$295
M070 1022	14.4Kbps PC Card modem w/XJACK®	\$185

TDK.

T210 1001	28.8Kbps V.34 Data/Fax PCMCIA modem Card	\$239
-----------	--	-------

NETWORKING**ASANTE**

A120 1010	10BaseT FriendlyNet Media Adapter FN1010	\$39.95
A120 1023	Thick/10BaseT MCN8-101	\$109
A120 1003	10BaseT Hub (8 RJ45 ports, 1 AUI & 1 BNC) 10THUB/8	\$149
A120 1062	10BaseT Hub (12 RJ45 ports, 1 AUI & 1 BNC) 10THUB/12	\$149
A120 1032	ASANTE Micro ASANTEPRINT 10BT	\$285
A120 1054	ASANTE Ethernet card for Nubus 10BT	\$49
A120 1059	ASANTE LC-TN for LC & LCII w/FPU	\$59

radius*

81/110

\$1489*

BEST BUY

Monitor not included.

Features:
730MB HD
8MB RAM
4XCD-ROM

*Price after \$200 Mail-In Rebate. Offer ends 2/29/96 R012 1005

WACOM

\$298

ARTZ II 6"X8" GRAPHICS TABLET
Edit images, paint, draw and develop your technique to create stunning art with a new Wacom Graphics tablet!
LIFETIME LIMITED WARRANTY
30 DAY MONEY BACK GUARANTEE**EPSON**

\$1179

ES-1200C Scanner
High detailed 4800dpi, 30-bit color scanning.
2 YEAR WARRANTY**NEC**

\$799

NEW PRODUCT
MultiSync XV17+ 17" Color Display
Three Year Warranty
PaperPort Vx
The easiest way to get paper into your Mac.
NEW LOW PRICE\$299
V
VISIONEER
PaperPort Vx
The easiest way to get paper into your Mac.
30 DAY MONEY BACK GUARANTEE**FastMac v.34**

\$139

28,800 bps Modem
5 YEAR WARRANTY
Source Code 69046**ClubMac**

1-800-258-2622

1-800-258-2622

1-800-258-2622

1-800-258-2622

1-800-258-2622

Call the experts on our
NEW 800-Hotlines:
for Apple Systems &
Memory Upgrades!

MacCo

FREE TECH SUPPORT • NEXT DAY DELIVERY • AWESOME SERVI



Full
line of
Apple® Systems
800-800-MACS

GLOBAL VILLAGE CONNECTS YOU TO THE WORLD!

28.8 V.34 Faxmodem

- The ONLY Macintosh faxmodem with Speed Enhancers
- Flash ROM upgradable
- Voice/fax call handling
- Award-winning GlobalFax 2.5 and GlobalFax OCR software
- Fax scheduling and broadcasting
- High-quality output for detailed graphics

23483 PowerPort Platinum PC Card 28.8.....\$349.95
23486 PowerPort Platinum Pro PC Card 28.8/10T....519.95



**EXCLUSIVE
BUNDLE!** **ONLY
\$54.90***

**SAVE
\$25!**
26833

Quicken 6.0

The award-winning electronic checkbook for your personal or small business financial management.



MacInTax

Prepares your personal income tax returns and forecasts for the following year's taxes.

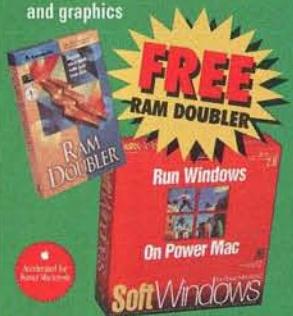


*Reg. \$79.90; price includes \$20 offer plus \$5 mfr.'s rebate (coupon in box).

Power Bundle!

FREE RAM Doubler

- Twice the RAM without upgrading
- Have more open applications
- Larger range for video, multimedia and graphics



**FREE
RAM DOUBLER**

**Run Windows
On Power Mac**

SoftWindows

SoftWindows 3.5

- Runs all Windows and DOS applications
- Puts PC environment into a scaleable window on Mac desktop
- 486 processor emulation included

26530 SoftWindows Power Mac/
RAM Doubler 3.5" Disk.....\$294.95
26529 SoftWindows Power Mac/
RAM Doubler CD.....294.95



**ONLY
\$449**
25226

SONY

15" Multiscan® 15sx Trinitron Display

- 13.9" viewable image size
- Resolution up to 1280 x 1024 @ 60Hz
- Plug and play ready
- 0.25mm Aperture Grille Pitch
- 3 yr. warranty

INTERNATIONAL CUSTOMERS

Please call 603-446-3333 or fax 603-446-7791.
Additional charges & restrictions may apply.



INPUT/OUTPUT

21197 Adesso TruForm Keyboard	\$89.95
19814 Agfa Arcus II w/10 FREE film rolls .....	.2195.
2374 CoStar LabelWriter XL+	239.95
23075 Epson Color Stylus II	399.
2499 GDT PowerPoint	99.95
24020 HP LaserJet 5L FS	499.
17589 Kensington Thinking Mouse	89.95
25697 Kensington Turbo 5.0	109.95
26232 Microtek ScanMaker E3	389.
16212 Mouse Systems MacPoint	24.95
23538 Okidata OL610E/PS Printer	799.
20770 UMAX BizCard Reader	239.
17779 Visioneer Mac PaperPort .....	.269.
22422 Wacom ArtPad 2 + Dabbler	159.95

**Full line of
PowerBook® Notebooks
800-800-MACS**

COMMUNICATIONS

6115 Freesoft White Knight 12.0	\$85.
11419 Hayes ACCURA 144+FAX144 .....	.99.95
16949 MDS FaxModem 28.8	149.95
4879 Practical Periph MC144MTII .....	.89.95
23031 Prometheus CyberPhone 28.8 .....	.259.95
22159 QualComm Eudora Pro .....	.59.95
18792 Radish Comm InsideLine .....	.109.95
22236 Software Ventures Internet Valet .....	.39.95
23286 SupraExpress Plus 28.8 .....	.164.95
17048 U.S. Robotics Sportster V.34 Fax .....	.219.95
24238 Ventana Netscape Navigator/PE .....	.44.95
17470 Zoom FaxModem V.34 .....	.169.95

MULTIMEDIA/VIDEO

19485 Altec ACS500 Speakers	\$299.95
25826 IMS Twin Turbo 128M-4M PCI .....	.599.
17314 Magnavox 14" Color Display .....	.299.95
25623 Matrox MGA Millennium 4MB PCI .....	.529.
25700 MagInnovation DX1795 17" Monitor .....	.799.
25895 Number Nine Imagine 128-4M .....	.799.
21797 Viewsonic 15ES 15" Monitor .....	.569.

BUSINESS

13510 AEC FastTrack Schedule	\$169.95
23995 Automatic Software Big Business .....	.379.95
24055 Best!Ware Mind Your Own Busin .....	.79.95
25478 Claris FileMaker Pro 3.0 Uppg w/fonts	99.95
23160 ClarisWorks Upgrade after rebate .....	.49.
16551 Microsoft Office for Mac 4.2 Upgd .....	.279.95
16552 Microsoft Word 6.0 Upgrade .....	.119.95
8010 Niles EndNote Plus .....	.169.95
16548 Symantec ACT 2.5 Upgrade .....	.49.95

UTILITIES

6740 Aladdin StuffIt Deluxe	\$73.
20403 C & G Conflict Catcher 3 Upgrade .....	.39.95
17537 Central Point MacTools Pro 4.0 .....	.99.95
12093 DataViz MacLink+ Translators Pro .....	.95.
23130 Insignia SoftWindows PMac Upg .....	.124.95
6925 Now Utilities .....	.79.95
16860 Symantec Disk Doubler Pro 1.1 Upp .....	.39.95
16323 Symantec Norton Utilities Upgrade .....	.39.95
10312 Symantec SAM Upgrade .....	.29.95
14918 Symantec Suitcase Upgrade .....	.24.95

control, all credit card orders phoned in weekdays by 3 a.m. ET will ship Airborne Express for delivery the next business day. (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery. **APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands:** Shipping may require additional time and charges. All other areas: Call 603-446-3333 or FAX 603-446-7791 M-F 9 a.m.-5:30 p.m. ET

OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge. • All of our products are covered by manufacturer's warranty. • We are not responsible for typographical errors. • Pricing and promotions subject to change without notice.

Continental U.S.: Shipping Charges: \$5 per order up to 10 pounds. On orders weighing 10 pounds or more, shipping is \$1 per pound. Please call for weight/shipping charge information. Barring events beyond our

control, all credit card orders phoned in weekdays by 3 a.m. ET will ship Airborne Express for delivery the next business day. (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery. **APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands:** Shipping may require additional time and charges. All other areas: Call 603-446-3333 or FAX 603-446-7791 M-F 9 a.m.-5:30 p.m. ET

©1996 PC Connection, Inc., Marlow, NH. MacConnection & the raccoon characters are registered trademarks of PC Connection, Inc. All other trademarks remain the property of their respective companies.

nection®

• BEST PRICING • BEST SELECTION • CUSTOM SYSTEMS OVERNIGHT!



Become a Photographer, Web Master & Illustrator!



PhotoDeluxe

- Features built-in templates to add in design
- Create amazing special effects: remove red eye
- 500 FREE photos, clip-art images and templates
- Versatile software guides you through every project

ONLY
\$89.95
25660

PageMill

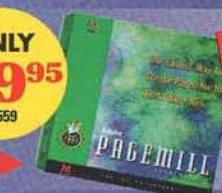
- All-in-one page development for the World Wide Web
- Create high-quality, error free Web pages in no time
- WYSIWYG authoring/editing in a normal word processor

PageMill to SiteMill Upgrade
\$299.95
26417

SiteMill

- Work with TIFF and other raster file formats
- Run Photoshop plug-ins within Illustrator
- Rasterized artwork in place
- Built-in color separations

ONLY
\$99.95
24559

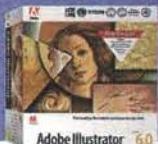


MACUSER AWARD
LIVE WINNER
Best New Page-Design Product

NEW

SiteMill

- Advanced Web site management software
- Easy navigation, drag & drop link creation
- Powerful PageMill authoring/editing features



Upgrade CD
ONLY
\$98.95
26838

Illustrator 6.0

- Work with TIFF and other raster file formats
- Run Photoshop plug-ins within Illustrator
- Rasterized artwork in place
- Built-in color separations

NETWORKING

24561 Adobe After Effects 3.0	\$649.95
21257 Adobe FrameMaker 5.0 CD	629.95
24672 Adobe Illustrator 6.0	389.95
22197 Adobe PageMaker 6.0	549.95
24471 Adobe Photoshop 3.04	569.95
4562 Adobe Premiere 4.2	499.95
24617 Auto FX Photo Edges Vol.3	179.95
3011 Avid VideoShop 3.0	249.95
22788 Corel Gallery 2 CD-Mac	79.95
24535 Fractal Design Painter 4.0	379.95
20749 Fractal Design Poser	124.95
20046 Macromedia Design Studio	649.95
5087 Macromedia Director 4.0	819.95
24014 Macromedia FreeHand 5.5	399.95
24509 MetaTools Kai's Power Tools 3.0	129.95
11423 MetaTools KPT Bryce	79.95
19613 MetaTools KPT Convolver	129.95
17342 Pantone Color Drive	145.95
24580 Ray Dream Design Studio	299.95
23296 T/Maker Incred. ImagePak 25,000	49.95

GRAPHICS

2583 Asanté FriendlyNet 10-T	\$29.95
2775 Asanté Hub 8 .....	.145.
6701 Asanté MacCon-I 10-T .....	.89.
24593 Dayna Communicard 10-T PC Card .....	.159.
21362 DaynaPORT Enet LCCommSlot .....	.79.
23492 Farallon AirDock IR Adapter .....	.69.
11499 Farallon EtherWave AAUI Trans .....	.109.
1723 Farallon PN303 DIN-8 3 pack .....	.49.95
15490 Sonic 10Base-T Transceiver .....	.33.95
16854 Sonic Micro Print/12 .....	.319.
22503 Sonic Quickstream/3 .....	.829.
14545 Timbuktu Pro-Mac .....	.135.

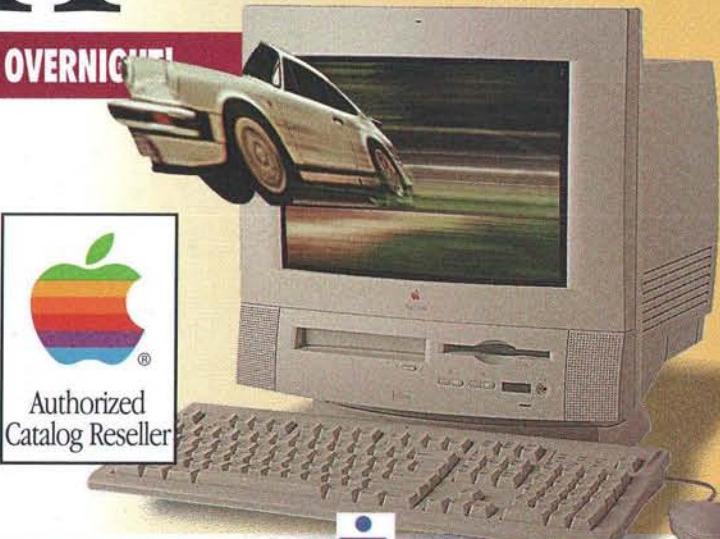
EDUTAINMENT

18246 A.D.A.M. CD	\$39.95
13509 Broderbund MYST CD .....	.44.95
1720 Delorme Street Atlas USA CD .....	.74.95
13714 Delta Tao Eric's Ult. Solitaire .....	.34.95
21449 Lucas Dark Forces CD .....	.49.95
3675 Starplay Crystal Caliburn .....	.29.95
4764 Voudette FLOWERscape .....	.49.95



Boston Computer Society declares MacConnection "Best All Around Company" 2 years in a row!

Berkeley Mac Users Group awards MacConnection "Best Mac Mail-Order Company!"



HP DeskWriter 660C

- Crisp, clear text at up to 600 dpi; color at up to 600 x 300 dpi
- Exclusive HP Resolution Enhancement technology
- 16.7 million colors; HP ColorSmart
- Resident black and color ink cartridges
- 3-year HP warranty

ONLY
\$379
21112

STORAGE

22886 Apple External 850MB Drive	\$399.95
9054 MDS Internal 1GB Drive .....	.299.95
15950 MDS SyQuest 200MB Drive .....	.399.95
26948 Pinnacle RCD 5040 Recordable CD1295	
7070 SyQuest 200MB Cartridge .....	.57.95

ZIP DRIVE

Affordable & portable storage drive offers high capacity storage on inexpensive 100MB disks. Compact design weighs approximately 1 lb.

ONLY
\$199.95
19171



CALL TODAY!
FREE
Catalog Subscription

MEMORY AT THE LOWEST PRICES!

Ask about FREE installation!

800-800-6227



800-800-3333 OR FAX YOUR ORDER
603-446-7791

496MW

We specialize in
Power Mac
Systems
for Graphic
Professionals

Great Price,



\$1529



\$2679

Call for
Mac Clones
Pricing



Mac OS

PowerPC

Power Macintosh 7200/75
8MB RAM, 500MB HD, CD-ROM drive,
Monitor & keyboard sold separately.



- Add 14" Color Monitor
 - Extended Keyboard
- Complete system price \$1,939
Lease for only \$69/month*

Power Macintosh 7500/100

16MB RAM, 500MB HD, CD-ROM drive
Monitor & keyboard sold separately.



- Add 15" Hitachi SuperScan Display
 - Extended Keyboard
- Complete system price \$3,119
Lease for only \$114/month*

Power Macintosh™ Systems, Software



Interactive Training CD's from Quay 2
17 different titles including
QuarkXPress, Photoshop
and Illustrator

\$99 each

EPSON

\$1799



Epson Stylus Pro XL
Prints up to 12.5" x 18" full
bleed in photo quality color

**RASTEROPS™
HITACHI**



MW
EDITORS'
CHOICE

New
Lower
Price

\$1999

Hitachi SuperScan MC21

21" flat square CRT .28 dot pitch Black Matrix
invar. Supports resolutions up to 1600 x 1200
at 85HZ

15" SuperScan MC15	\$459
17" SuperScan MC17	\$999
20" SuperScan MC20	\$1499
New 21" SuperScan MC21HR	\$2199

FWB®
incorporated



\$399

\$1,549

NEW PCI JackHammer
NEW Hammer CD-R 2X
We carry the full line of FWB products including
Fast & Wide Disk Arrays, DATs and more. Call!

radius®

PressView 21 SR, PressView 17 SR,
ThunderColor PCI cards and more call!



TRUEVISION™

TARGA 2000 PCI
Professional digital video authoring
and editing system.

Let us help you configure the ideal
Digital Video System

The Express Advantage:



Expert Advice

We know our products & understand
your applications. No order-takers here.

800

Free Tech Support

Call toll-free for as long as you
own your Mac.



Business Leases

Flexible leasing options for
qualifying businesses.



Fast Delivery

With FedEx & UPS, we ship promptly,
based on availability.



Top Products

We carry only the best products
available that we've evaluated for
quality.

4-Year On-site Extended
Warranties.

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. Mac pricing based on purchase of CPU with monitor. "Stand Alone" CPUs may be more. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, cannot be returned after it has been opened. *Lease prices based on 36 month term with 10% purchase option. Call for complete details.

Expert Advice.



Power Macintosh 8500/120

16MB RAM, 1GB HD, CD-ROM drive.
Monitor & keyboard sold separately.

- Add 17" Techmedia Display
 - Extended Keyboard
- Complete system price \$4,839
Lease for only \$179 / month*



Power Macintosh 9500/132

16MB RAM, 1GB HD, CD-ROM drive
and 2MB video card.
Monitor & keyboard sold separately.

- Add 20" Hitachi SuperScan Display
 - EA Research EASY Color 16/1600
accelerated PCI graphics card
 - Extended Keyboard
- Complete system price \$6,779
Lease for only \$249/month*



and Peripherals



UMAX Vista S12
High-quality, 24-bit color, 600 x 1200 dpi, one pass
scanning

Vista S6	\$529
Vista S8	\$649
New PowerLook II with Pro Bundle	\$3395
New Mirage with Pro Bundle	\$6895
Choose your software bundle—	
Pro Bundle: Full Photoshop KPTse	\$189
LE Bundle: Photoshop LE & OCR	\$69



ARTEC ViewStation A6000C-M
2400 dpi resolution (600 x 300 optical).
Includes Photoshop LE and WordLinx OCR.

Dataproducts.



Typhoon 8 • 1200 DPI
1200 x 1200 dpi, 11" x 17" edge-to-edge printing,
36MB of RAM. Includes Free Fax modem
(until 3/31/96).

Includes FREE
Fax Modem

\$4829

**Call to receive a
FREE catalog!**

1-800-765-0020



We stock a complete line of quality products from all of the above manufacturers & more.

1-800-765-0020

Order Toll Free M-Th 8am-7pm, Fri til 6pm, Sat 10am-2pm (CST) • 24 Hour Fax • Customer Service Hotline: 1-800-236-3059



International Orders Shipped Daily

Fax: 312.244.3081

Phone: 312.244.3000

Circle 81 on reader service card

express direct

2720 North Paulina Avenue
Chicago, Illinois 60614

ProDirect

800-555-1256

Fax 24 hours a day 612-941-1109
International orders call 612-941-1805

Professional Service.....Manufacturer Direct Prices!

Service•Performance•Price... ALWAYS™



Seagate

1.2 GB Medalist	(1080 MB Formatted)	\$295	\$355
11 ms Seek	5400 RPM	128 KBuffer	5 Year Warranty
2.4 GB Hawk		625	695
9 ms Seek	5400 RPM	512K Buffer	5 Year Warranty
2.5 GB Barracuda 2		655	725
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty
4.3 GB Barracuda 4		1155	1225
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty
2.5 GB Fast & Wide Barracuda		825	925
8 ms Seek	7200 RPM	1024 K Buffer	5 Year Warranty
4.3 GB Fast & Wide Barracuda		1175	1275
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty
9.0 GB Elite		1925	2025
11 ms Seek	5400 RPM	1024 Buffer	5 Year Warranty
9.0 GB Elite Fast & Wide		2050	2150
11 ms Seek	5400 RPM	1024 Buffer	5 Year Warranty

90 Day Performance Guarantee on all Hard Drives... Call

FUJITSU

530 MB		\$175	\$235
9 ms Seek	4500 RPM	256K Buffer	3 Year Warranty
1.2 GB (1080MB Formatted)		255	315
9 ms Seek	5400 RPM	512K Buffer	3 Year Warranty
2.1 GB		565	635
8.5ms Seek	7200 RPM	512K Buffer	5 Year Warranty
4.2 GB		855	925
8ms Seek	7200 RPM	512K Buffer	5 Year Warranty

90 Day Performance Guarantee on all Hard Drives... Call

540 MB	DeskStar	\$175	\$235
9 ms Seek	5400 RPM	128K Buffer	5 Year Warranty
1.2 GB (MR HEADS... FAST!)	DeskStar	255	329
8.5 ms Seek	5400 RPM	512K Buffer	5 Year Warranty
2.2 GB	UltraStar	755	815
8.5ms Seek	7200 RPM	1024K Buffer	5 Year Warranty
4.3 GB	UltraStar	1325	1385
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty
5.3 GB	UltraStar	1345	1405
8ms Seek	5400 RPM	1024K Buffer	5 Year Warranty

MAC Formatted capacities vary... Call our experts today!

90 Day Performance Guarantee on all Hard Drives... Call

Digital Tape Backup

HEWLETT PACKARD

2.0 GB			
SCSI 15MB/min., 4mm media,		\$835	\$895
3.5 GB			
SCSI 45MB/min., 4mm media,		940	995
4-10 GB			
SCSI 60MB/min., 4mm media,		1129	1189
24-48GB SCSI Auto Tape Loader		3195	3295
HP1550, 60MB/min., 4mm media			

Quantum DLT SCSI

Model	Capacity	Trans.Rate	Media	Price/Ext.
DLT2000X30GB	2.5MB/sec	DLT20	4225	
DLT4000 40GB	3MB/sec	DLT40	5899	

ProDirect, Inc. 6824 Washington Ave. South Eden Prairie, MN

8:00am-7:00pm (CST) Mon.-Fri.

10:00 am- 3:00 pm Saturday



✓ NEW LOWER PRICES

- PowerStor™ active termination with the flip of a switch. Constantly adjusts termination levels to your systems requirements.

- Optional Fixed Daisy Chain Connector... Puts an end to your cable nightmares
- Exclusive On/Off switch Conveniently located on the FRONT of our cabinet.

✓ Power and drive activity light.

HOT! SPECIALS

Quantum 127 MB Powerbook Drive	\$99	\$135
Q Daytona, 4500RPM, 17 ms seek, 128K cache, 1 year warranty		
Quantum 341 MB Powerbook Drive	\$175	\$235
Q Daytona, 4500RPM, 17 ms seek, 128K cache, 1 year warranty		
IBM 540 MB Powerbook Drive	\$255	\$315
IBM TravelStar 12 ms Seek/4900 RPM/128K Buffer 1 Year Warranty		
IBM 1.2 GB DeskStar	\$255	\$315
IBM 1.2 GB, 5400RPM, 8.5 ms seek, 5 year warranty		
Fujitsu 2.1 GB	\$595	\$655
F2915s, 7200RPM, 9ms seek, 5 year warranty		
Quantum Atlas 4 GB	\$1199	\$1259
Q34301, 7200, 8.6ms seek, 1024K cache, 5 year warranty		
Seagate 9.0 GB	\$1925	\$2025
ST410800, 5400RPM, 11ms seek, 1024K cache, 5 year warranty.		

PCI/NUBUS FAST & WIDE ACCELERATORS

Atto Express PCI \$345

Single channel RISC based PCI to Fast/Wide SCSI 3 accelerator card for Apple's PCI based computers. Ideal solution for your audio, video, prepress, and real time applications. Transfer rates up to 20MB/sec.Formatting software included.5 year warranty. Call for Disk Array Solutions! Also available in Dual Channel.

Atto Silicon Express 2 \$425

SCSI 1 & 2 support/transfer rates up to 10.0 MB/sec., supports multiple block sizes,takes advantage of parallel processing capability/Ideal for graphic design, multimedia applications and More!

Atto Silicon Express 4 \$829

Fast/Wide 16BIT SCSI 2 accelerator card for Apple's Nubus based computers.

Supports fast/wide SCSI 2 (16 BIT) transfer rates up to 20MB/sec. and fast SCSI 2 (8 BIT) transfer rates up to 10 MB/sec. Full 16 Bit wide support for the latest drives and disk arrays. Fully compatible with all existing SCSI 1 drives. Formatting software is included.5 Year Warranty.

New! FWB JackHammer \$465

Fast/Wide 16BIT SCSI 2 accelerator card for Apple's Nubus based computers.

Supports fast/wide SCSI 2 (16 BIT) transfer rates up to 20MB/sec. and fast SCSI 2 (8 BIT) transfer rates up to 10 MB/sec. Full 16 Bit wide support for the latest drives and disk arrays.

New! FWB PCI JackHammer \$385

Single channel RISC based PCI to Fast/Wide SCSI 3 accelerator card for Apple's PCI based computers. Ideal solution for your audio, video, prepress, and real time applications. Transfer rates up to 20MB/sec.Formatting software included.5 year warranty. Call for Disk Array Solutions! Also available in Dual Channel.

REMUS Disk Array RaidLevel 0 & 1 \$255

CD ROM & CD WRITERS

4x Pioneer CD ROM \$199

110 MS Seek 256 K Cache/Tray Design

4 x 6 Disk Pioneer CD ROM Changer \$455

4x Toshiba CD ROM \$235

6x Toshiba CD ROM \$435

2x Yamaha CDE 1020 \$1175

2x CD Writer 4x CD ROM

4 x Yamaha CDR 100 \$2675

4 x CD writer/Multisession>Selectable Speed

Prices are external and include all cables and software for a PLUG & PLAY Solution.

All prices are subject to change without notice. Returned orders are subject to a restocking fee. International customers pay all shipping charges. All shipping charges are non-refundable. To return merchandise call for an RMA number. All RMA's must be returned within 10 business days of issuance. Customers are responsible for shipping charges to return product.

• NEVER A SURCHARGE!

• *NO SALES TAX!

• SAME DAY SHIPPING !

• EXCLUSIVE! 90 DAY PERFORMANCE GUARANTEE!

CD ROM Special
Pioneer 4x 110 MS ONLY \$199 External

Quantum

✓ 365 MB	11 ms Seek	4500 RPM	128K Buffer	\$125	\$185
535 MB	9 ms Seek	5400 RPM	512K Buffer	175	235
730 MB	11 ms Seek	4500 RPM	128K Buffer	169	229
850 MB	11 ms Seek	4500 RPM	128K Buffer	195	255
1080 MB	10ms Seek	5400 RPM	128K Buffer	235	295
2.2 GB Capella	8.5ms Seek	5400 RPM	1024K Buffer	595	655
2.0 GB Atlas	8ms Seek	7200 RPM	1024K Buffer	685	755
4200 MB Grand Prix	8.6ms Seek	7200 RPM	512K Buffer	985	1085
4.3 GB Atlas	8ms Seek	7200 RPM	1024K Buffer	1040	1110

90 Day Performance Guarantee on all Hard Drives... Call

MICROPOLIS

✓ 2.1 GB	M4221	7200 RPM	512K Buffer	\$599	\$669
4.3 GB	M3243	7200 RPM	512K Buffer	935	1005
9.0 GB	M1991	5400 RPM	512K Buffer	1895	1995
10.0 GB	M4221AV	7200 RPM/512K Buffer		649	719
4.3 GB	M3243AV	7200 RPM	512K Buffer	1005	1075
9.0 GB	M1991AV	5400 RPM	512K Buffer	1985	2085

90 Day Performance Guarantee on all Hard Drives... Call

SCSI HARD DRIVE CABINETS

PowerStar™	5.25" or 3.5" hot swappable bezel HD enclosure				\$75
Minicab™	3.5" open-faced bezel HD enclosure				\$69
Full Height Cab	5.25" full height cab				\$139
Multi Bay Cabinets	5.25" and 3.5" 5 bays available				\$CALL
	Two, four, six, and eight bay cabinets available. All cabinets come with a 25-50 pin Mac system cable and a power cable. 1 year warranty on all cabinets.				
Multi Bay Rack Mount	5.25" and 3.5" 5 bays available				\$CALL
	Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.				

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay cabinets available. All cabinets come with a Mac system cable and a power cable. 1 year warranty on all cabinets.

Two, four, six, and eight bay

L A C I E
L I M I T E D

offers a world of storage solutions

Ready to
Plug And
Play

La Cie
Storage Utilities
FREE!*

Featuring **TSUNAMI** HARD DRIVES



● Ready to plug and play with switchable active termination, cables, and La Cie Storage Utilities.

● High-speed drive and disk-controller technology.

● Up to 4.3GB capacity in a 6.5"x8.5"x2.2" compact case.

\$269

Tsunami 850 MB

850MB Quantum Trailblazer	5400 rpm	3 yr. warr.	\$269
1080MB IBM Pegasus	5400 rpm	3 yr. warr.	\$319
1280MB Quantum Fireball	5400 rpm	3 yr. warr.	\$369
2160MB Ultrastar ES	5400 rpm	5 yr. warr.	\$669
4.3GB Quantum Atlas	7200 rpm	5 yr. warr.	\$1199

NEW!
NEW!

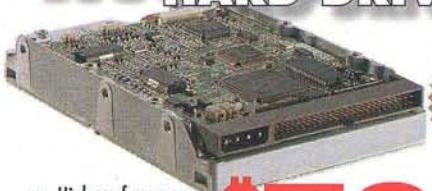


Call 1-800-999-1383

* La Cie Storage Utilities FREE with the purchase of a La Cie Drive. Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Tsunami, Joule, Joule Portable, La Cie Team, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without recourse. © Copyright 1996 La Cie, Ltd. All rights reserved.

Best
Value!

INTERNAL HARD DRIVES



Special
LOW
Price

\$599 IBM 2 GB

3.5" Hard Drives

850MB Quantum Trailblazer	5400 rpm	3 yr. warr.	\$199
1080MB IBM Pegasus	5400 rpm	3 yr. warr.	\$259
1280MB Quantum Fireball	5400 rpm	3 yr. warr.	\$309
2160MB IBM Ultrastar ES	5400 rpm	5 yr. warr.	\$599
4.3GB Quantum Atlas	7200 rpm	5 yr. warr.	\$1149

Brackets available for \$10 with internal hard drive purchase.

JOULE HARD DRIVES



\$369 Joule 1 GB

3.5" Portable Hard Drives - Quantum

850MB Trailblazer	3 yr. warr.	\$329
1080MB Fireball	3 yr. warr.	\$369
2210MB Capella	5 yr. warr.	\$799

Joule Bases - Supports Stacks Up To 6 Drives High

850MB Quantum Hard Drive	3 yr. warr.	\$389
1080MB Quantum Hard Drive	3 yr. warr.	\$429
230MB Optical	1 yr. warr.	\$529
270MB SyQuest	1 yr. warr.	\$479

Joule RAID

Quantum drives bundled with Trillium Research Software configurable to levels 0, 1, 4 & 5.

4.2GB	5 yr. warr.	\$1999	\$2299
8.4GB	5 yr. warr.	\$3499	\$3799
16.8GB	5 yr. warr.	\$6999	\$7299
25.8GB	5 yr. warr.	\$9999	\$10299

RAID
Drives only
NEW! RAID with
SCSI CARD

L A C I E
L I M I T E D

now versatile storage solutions...

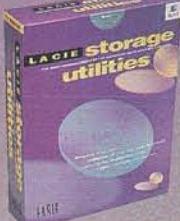


EZ135 MB
Cartridges
\$19.95

INCLUDES FREE
CARTRIDGE!

A \$99 VALUE
FREE

WITH ALL
LA CIE DRIVES!



L A C I E storage utilities

Includes acclaimed
Silverlining disk
management software
plus four other vital
performance
enhancements!

L A C I E
L I M I T E D



ALL NEW FROM SYQUEST
EZ135
DRIVES

- ▲ EZ offers the lowest per-megabyte media cost on the market.
- ▲ 13.5msec access time doubles ZIP's speed.
- ▲ The removable media value leader.
- ▲ Full 2 year warranty.

\$229
SyQuest EZ135

Syquest

200MB Internal	1 year warranty	\$319
200MB External	1 year warranty	\$369
200MB Cartridge		\$79
270MB Internal	1 year warranty	\$329
270MB External	1 year warranty	\$399
270MB Cartridge		\$59

OPTICAL and DAT

- ▲ Optical is the new standard in removable reliability.
- ▲ DAT — The ideal medium for data backup.

\$1999
2.6GB Optical



Other Optical

NEW! 230MB PowerBook Internal	1 year warranty	\$399
230MB Internal	1 year warranty	\$399
230MB External	1 year warranty	\$469
230MB Optical Cartridge		\$19.95
NEW! 2.6GB External	1 year warranty	\$1999
2.6GB Optical Cartridge		CALL

DAT Drives Inc. Retrospect	Internal	External
8.0GB Internal DAT DDS-2	\$799	\$899
8.0GB Turbo DAT DDS-2	\$1099	\$1149

CD- RECORDABLE DRIVES

- ▲ CD-Rs ship with Gear Multimedia software.
- ▲ Create your own CD with fast write capability.
- ▲ Low cost media for backup.

\$1099
2X Read/Write

CD-Recordables

2X Read/Write	\$1099
2X Read/Write Yamaha	NEW! \$1199
4X Read/Write Yamaha	NEW! \$2399

The Original!

APPLE EXTERNAL HARD DRIVES

FROM

L A C I E
L I M I T E D



Sold exclusively by these
and other fine Authorized
Apple Resellers:

COMPUSA



MacConnection



The MacZone

MacWAREHOUSE

MICRO CENTER

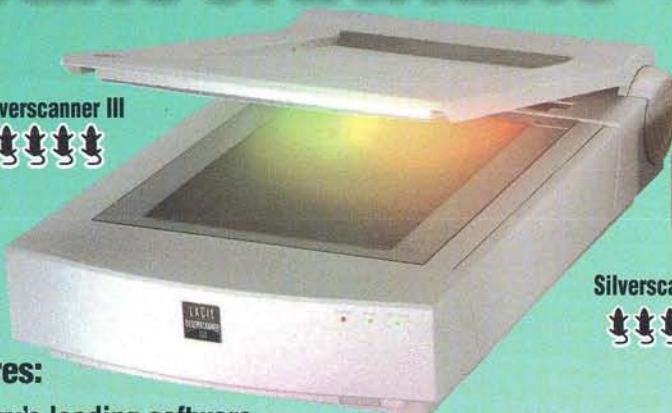
The only hard drive
backed with Apple
engineering. For a
local reseller or
catalog resource call
1-800-999-0499.

Call Today: 1-800-999-1383

* Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Jeude, Portable, La Cie, Term, DataSafe, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without notice. © Copyright 1995 La Cie, Ltd. All rights reserved.

30 BIT SCAN CLARITY FOR LESS **SILVERSCANNERS**

Silverscanner III
4.5



**Compare
these features:**

- The industry's leading software.
- Operates in true 30-bit pixel depth.
- Color previews in seconds.
- Scans in under a minute.
- Captures over 1 billion colors.

Silverscanner DTP Complete

Desktop color, 400x800dpi
interpolated to 3200 dpi.

- ▲ Photoshop LE
- ▲ Read-It Pro OCR
- ▲ Silverscan

\$899

Silverscanner III Package 1

Pro color, 600x1200dpi
interpolated up to 4800 dpi.

- ▲ Color It!
- ▲ Read-It Pro OCR
- ▲ Silverscan

\$1499

Silverscanner III Package 2

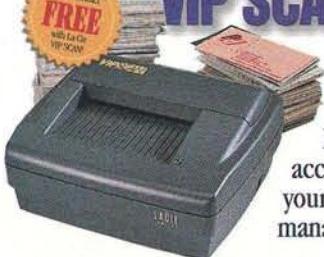
Pro color, 600x1200dpi
interpolated up to 4800 dpi.

- ▲ Photoshop (full)
- ▲ Read-It Pro OCR
- ▲ Silverscan

\$1799

INSTANTLY SCAN BUSINESS CARDS INTO YOUR MAC.

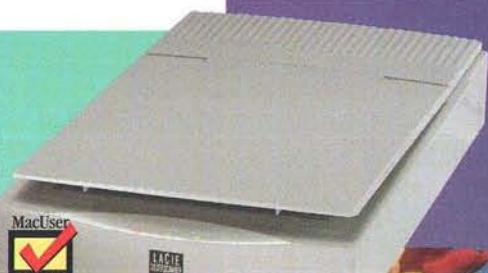
VIP SCAN \$199



Scan names,
addresses, phone
numbers and
logos for quick
access, then export to
your favorite contact
management software.

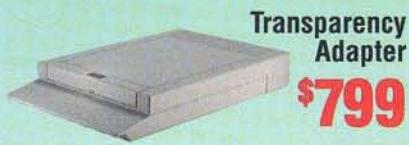
Mon.- Fri. 5AM-7PM & Sat. 8AM-NOON PST
International 503-520-9000
Fax 503-520-9100 (24 hrs.)
<http://www.lacie.com/~lacie>

FOR LESS



MacUser
BEST BUY

Silverscanner DTP
4.5



**Transparency
Adapter
\$799**

Sheet
Feeder
\$499



DRUM SCAN



30 BIT SILVERSCAN

**Compare our
drum beating
color scans.**

**Friendly!
Fast!
...more
customer
support**

**Toll-free tech line:
1-800-288-9919**



Circle 52 on reader service card



The Mac Zone®

Established 1986



FreeHand 5.0 to 5.5 Upgrade

Only
\$78⁹⁸
#87150

With FREE Paint Alchemy 2 & Terrazzo from XAOS Tools - A \$197 Value!

EXCLUSIVE! BLOWOUT!



Only
\$299⁹⁸
#04322

*DAYSTAR
DIGITAL

Universal PowerCache 50MHz FPU

Give your 030 Mac
Quadra speed!

Truevision® TARGA 2000N

The full-screen,
full-motion digital
video and audio
solution!



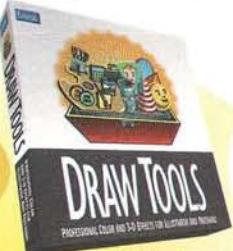
Only
\$2750^{*}
#86846

*With trade-in
upgrade

Only
\$48^{98*}
#91349

Extensis DrawTools

A powerful collection of
plug-ins for Illustrator
and FreeHand!



*With purchase
of FreeHand or Illustrator.
Must be on the same
invoice. Low Mac Zone
Price: \$98.98



8MB SIMMS
Only \$239⁹⁸
Call for details #06755

66MHz Turbo 601 for Macintosh IIci



NEW
LOW
PRICE!
Only
\$699⁹⁸
#92169

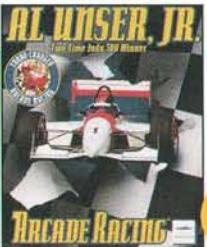


Only
\$574⁹⁸
#88415

Tenon
Intersystems

PowerMach Ten for Power Mac

Turn your Power Mac into an Internet server!



FREE Mac Pack II!

Al Unser, Jr. with Advanced Gravis GamePad

Strap yourself in for the
ride of your life!

Only
\$49⁹⁸
#88358

MICROTEK
Better Images Through Innovation.



Only
\$399⁹⁸
#06673

ScanMaker E3

The affordable color scanner



KENSINGTON

Only
\$108⁹⁸
#87483

Turbo Mouse 5.0

The award-winning mouse!

SoftWindows 2.0



Only
\$198^{98*}
#89315

*With purchase
of any Power Mac.
Low Mac Zone Price: \$298.98

IN SIGNIA
SOLUTIONS

HEWLETT
PACKARD
Authorized Value-Added Reseller

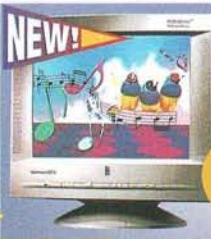
NEW
LOW
PRICE!

Only
\$238⁹⁸
#88902



DeskWriter 600 600 dpi Printer

Affordable inkjet printing at home!



ViewSonic
See The Difference!

Only
\$698⁹⁸
#87259

ViewSonic 17EA Multimedia Monitor

© Copyright 1996 Multiple Zones International Inc. All rights reserved. The Mac Zone is a federally registered trademark.

Before you buy, call The Mac Zone

1-800-436-0606

For the best Macintosh products at better than
Warehouse and Superstore prices.

Fax (206) 603-2500 • International (206) 603-2550 • CompuServe code: GO MZ

CORPORATE SALES
1-800-258-0882

GOVERNMENT SALES
1-800-372-9663

EDUCATION SALES
1-800-381-9663

INTERNATIONAL SALES
1-206-603-2570

eWorld
@MACZONE

Full Line of Apple Macintosh® Computers



Over 5000 Products

Overnight Delivery only \$3*

*Up to 10 lbs.

The Hottest Bundles!

Low Prices Everyday



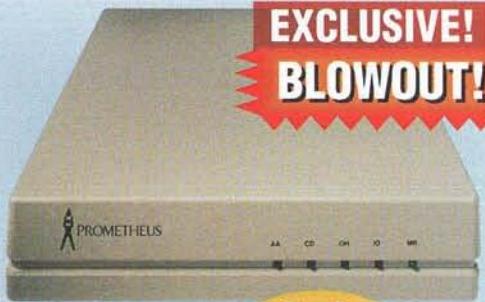
PowerWave 604 Mac Compatibles!

PowerPC™ performance for less!

- 120MHz PowerPC™ 604 microprocessor
- 8MB RAM, 1GB hard drive
- 4x CD-ROM drive
- 16-bit stereo sound
- Extended keyboard and mouse

Only
\$2869
#86603

**EXCLUSIVE!
BLOWOUT!**



CyberPort
**14.4 Fax/
Modem**

Send data and receive faxes on your Mac!

Only
\$49.98

#90234

Shop The Mac Zone
ONLINE!

Online Shopping
Internet Address:
<http://www.maczone.com/maczone>
or to visit our store on
marketplaceMCI
<http://www.internetMCI.com/>
marketplace/mzone

eWorld type: **MACZONE**
(under shortcut)

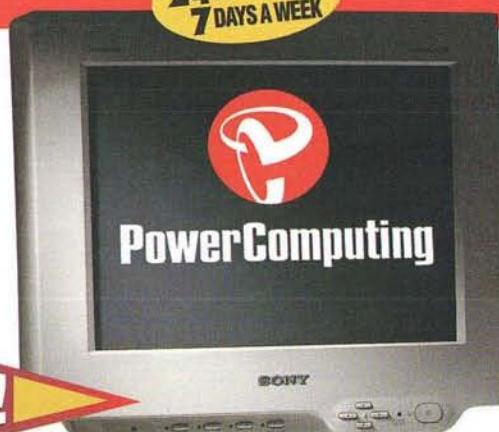
CompuServe type: **GO MZ**

Your Source Code
MW604

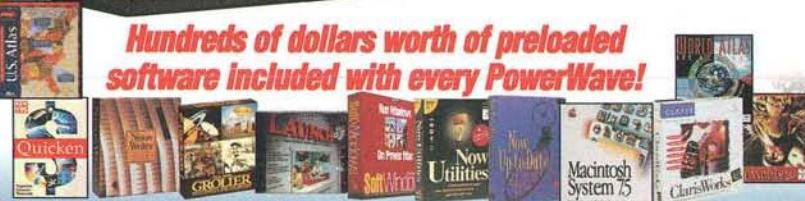
Circle 71 on the reader service card

NEW!

Monitor
sold separately.



Hundreds of dollars worth of preloaded software included with every PowerWave!



Sleepless in Seattle...

You bet! We're here 24 hours a day, 7 days a week to serve you when you need us.

1-800-436-0606
Call Today for Your **FREE CATALOG!**

YES! START MY FREE 1-YEAR CATALOG SUBSCRIPTION ASAP!



Name _____ Apt. _____
Address _____ Zip _____
City _____ State _____

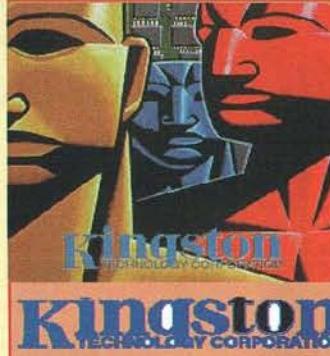
Mail to: The Mac Zone, 15815 SE 37th St., Bellevue, WA 98006-1800

I buy primarily for:
Home Use
Business Use
Work-from-
Home Use

Your Source Code
MW604

For current up to date pricing and custom configuration
see our web-site at <http://www.wcn.com>

Tel: (800) 761-1999
BIGMAC a division of WCN



168 Pin DIMM Modules
For Power Mac 9500 to 7200
8/16MB Call for
32/64MB Best Pricing
256/512K Cache 109/159
1MB V-RAM 69

72 Pin SIMMS Modules
6100-8100, Quadra, Centris & Performas
8/16MB Call For
32/64MB Best Pricing
Power Book 500/5300/190
8/16MB CALL FOR
32/64MB Best Pricing

Prices as of January 25th 1996 Please call for Current pricing. Quantity discount available.

DAYSTAR
DIGITAL

DAYSTAR Genesis MP \$14295
16MB RAM, 1GB H.D., 4xCD

Genesis MP runs Photo Shop 4 times faster than Apple Power MAC 9500. Using 4 PowerPC 604 Processor

PERFORMA

6300	16/1GB/CD	2495
6200	8/1GB/CD	1699
6220	16/1GB/CD	1825
5215	8/1GB/CD	1899
640CD-DOS	12/500/CD	1525
631	8/500/CD	1399
630	8/350/CD	1275

POWERBOOK

150	4/240	750
190	8/500	1620
190CS	8/500	1889
5300CS	8/500	2090
5300CS	16/750	2750
5300C	8/500	3050
5300C	16/750	3295
5300CE	32/1GB	4995
5300	8/500	1299
520/520C	8/240/4/160	1350/1750

MONITORS

APPLE 14"/15" Hi-Res	345/369
APPLE 17"/20" Hi-Res	899/1899
APPLE 1705	695
APPLE 1710/1710AV	885/1035

DEMO MAC'S

8500/120	0/0/0	2250
8500/132	0/0/0	2795
9500/120	0/0/0	2595

Call for APPLE 3rd party products • All prices reflect a cash discount, any other method of payment is 3% higher. International Orders, Visa, MC & AmEx Welcome • Next Day Shipping for U.S.A. & International. Prices are subject to change w/o notice & Limited Quantity

BIG MAC



SPECIAL

5300	8/500	1299
5300C	16/750	3250
5300CE	32/1GB	4995
5300CS	8/500	2090
8500/120	16/1GB/CD	3495
9500/132	16/1GB/CD/ATI	3595
7200/75	8/500	1025

WordPerfect for MAC & Power MAC \$39

ANY CUSTOM CONFIGURATION FOR
AUDIO/VIDEO & DESK-TOP PUBLISHING..

POWER MAC'S

7200/75	8/500 w/o CD	1025
7200/75	16/1GB/CD	1699
7200/90	8/500/CD	1399
7200/90	16/1GB/CD	1599
7200/90	0/0/0	1290
7500/100	0/0/0	1950
7500/100	16/500/CD	2475
7500/100	16/1GB/CD	2595
7500/100	32/2GB/CD	3375
7500/120	16/2GB/CD	3695
8500/120	16/1GB/CD	3495
8500/120	32/2GB/CD	4395
8500/120	16/2GB/CD	3995
8500/120	80/2GB/CD	5850
8500/120	0/0/0	2695
8500/132	16/1GB/CD	4295
9500/120	80/1GB/CD	4595
9500/120	16/1GB/CD	3295
9500/132	16/1GB/CD	3595
9500/132	0/0/0	2795
9500/150	COMING UP IN MAR	CALL
6100/66	8/500/CD	1350
7100/80	8/500/CD	1595
7100/80AV	16/700/CD	1899
8100/100	8/700	CALL
8100/100AV	16/1GB/CD	CALL
8100/110	16/2GB/CD	2850

WORKGROUP SERVER

6150/60	8/500/CD/AS	169
8150/110	16/2GB/CD/DAT	439
8150/110	16/1GB/CD(www)	415
9150/120	16/2GB/CD/ DAT(www)	729
Apple Share 4.0.2		49

PRINTERS

APPLE LASER 4/600	79
APPLE LASER 16/600	219
APPLE LASER 12/600	589
APPLE LASER 360	109
APPLE COLOR Style Writer 2400	29

FACTORY REFURBISHED

QUADRA 800/840AV	8/230	139
QUADRA 650	8/230	155
PERFORMA 466	4/160	39

APPLE PARTS

8500 LOGIC BOARD	79
9500 LOGIC BOARD	129
650/800/950 Logic Board	750/595/69
8100/80 LOGIC BOARD	109
120/130Mhz PROCESSOR	799/119
SUPER FLOPPY	16
POWER SUPPLY/CASES FOR ALL MA	
ATI XCLAIM PCI VIDEO CARD	25

**Trade Your Old
MAC 4 The New
POWERMAC**

TEL: (800) 761-1999 • FAX: (310) 235-1790
TEL: (310) 235-1780 • http://www.wcn.com
1831 PONTIUS AVE., LOS ANGELES, CA 90025

& SOFTWARE PRICES

If you
find a better
price, call
CDW®
before you
buy!



SOFTWARE FOR EVERY NEED!

NEW!

Adobe Illustrator V6.0

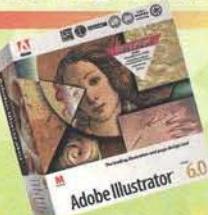
Feel the ultimate power of the premier image-editing tool!

Upgrade V5.X to V6.0 (3.5" + CD)

\$115.09 CDW 64085

Full version (3.5" + CD)

\$363.58 CDW 64089



NEW!

Adobe PageMaker V6.0

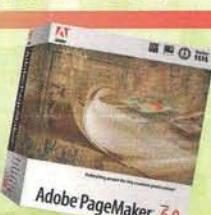
The world's leading professional page layout software

Version upgrade

\$144.99 CDW 57782

Full version (3.5" + CD)

\$546.32 CDW 57017



Adobe

Illustrator V6.0

Feel the ultimate power of the premier image-editing tool!

Upgrade V5.X to V6.0 (3.5" + CD)

\$115.09 CDW 64085

Full version (3.5" + CD)

\$363.58 CDW 64089



Adobe PageMill™ V1.0

\$95.22 CDW 61992

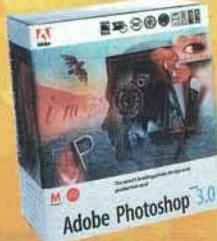
NEW!

Adobe Photoshop V3.0.5

Version upgrade

\$159.71 CDW 57786

Full version (3.5" + CD) **\$546.32** CDW 47958



Adobe Type Manager™ V3.8

\$39.16

CDW 44012

Adobe After Effects V3.0

\$631.99

CDW 61991



\$2.99
shipping
on all
orders
\$200 or less!

(800)509-4CDW (4239)

MW1608

©1996 CDW Computer Centers, Inc.



CLARIS

FileMaker Pro V3.0

Relational database power!

Version upgrade

\$94.47 CDW 63951

IN SIGNIA
SOLUTIONS

Full version **\$179.99** CDW 63817

SoftWindows V2.0

for PowerMacintosh

Run Windows applications on your PowerMac!

Full version, with CPU purchase

NEW!



\$183.65 CDW 64066

Full version

\$282.01 CDW 64062

Version upgrades also available.

Intuit

NEW!

MacInTax 1995 Federal Final Edition

Get ready for tax time!



caere

\$42.00 CDW 64736

Caere OmniPage Pro V6.0

The essential Macintosh scanner companion

Version upgrade



Turn the
page for
more
savings!

COMPUTER DISCOUNT WAREHOUSE™

MacWorld 496



COMPUTER DISCOUNT WAREHOUSE™

TOP SELLING MACINTOSH SOFTWARE

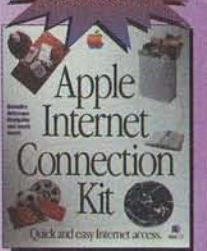
Apple® Internet Connection Kit

All-in-one solution for Internet connection

- ◆ Apple® Internet Dialer
- ◆ Netscape Navigator for surfing the Web
- ◆ Email software
- ◆ Fetch and Anarchie FTP software
- ◆ Aladdin Stuffit Expander
- ◆ NewsWatcher for newsgroup discussions
- ◆ NCSA Telnet terminal emulation software
- ◆ SLIP/PPP for modem connection
- ◆ QuickTime VR Movie Player
- ◆ Adobe Acrobat Reader
- ◆ Apple Guide on-line help



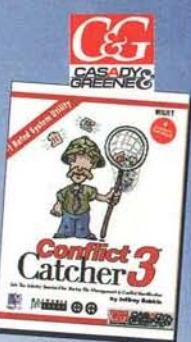
\$43.93
CDW 58671



Conflict Catcher 3

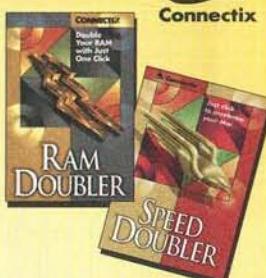
Conflict Catcher 3, the upgrade to multiple-award-winning Conflict Catcher II, offers an intelligent, complete solution to dealing with startup file conflicts and management. Conflict Catcher offers a quick, walk-through startup file conflict test with the ability to test existing software. Other features include the creation of sets, linked startup files and a detailed System Report.

Version Upgrade **\$31.34** CDW 53648
Competitive Upgrade **\$31.32** CDW 53649
Conflict Catcher 3 **\$59.46** CDW 53335



PowerMac™ PowerPack

RAM Doubler V1.6/Speed Doubler V1.1



Get two incredible utilities at one nifty price with Connectix's PowerMac PowerPack. RAM Doubler is a system extension that gives you extra memory to run all of your favorite software. Speed Doubler accelerates your Mac without the expense or hassle of upgrading your hardware.*

\$75.16 CDW 64073

*System requirements apply,
call CDW today for more information.

Emailer

The complete email solution for Macintosh

Claris Emailer™ is the fast, flexible, easy way to manage all your email. Whether you are using the Internet, America Online, CompuServe, eWorld or RadioMail, Claris Emailer lets you send, receive, reply, forward and store all your email messages and files quickly and easily.

\$55.99 CDW 57391



If you find a better price, call CDW® before you buy
(800) 509-4CDW



BUY WITH CONFIDENCE
CDW® IS A
NASDAQ TRADED COMPANY
TICKER SYMBOL: CDW
D & B rated SA1 Duns 10-762-7952

No surcharge for credit cards



Credit Card charges are not submitted until time of shipment. Freight is calculated on the customer's actual weight charge plus insurance and packaging premium. The cost of insurance is 0.35% (0.035) of the total value of the order. Insurance is not included in the shipping charges. All shipping charges are FOB Chicago, IL. For your protection we ship only to your verified billing address. Non-delivery returns subject to a restocking fee. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. *Trademark of all companies listed in this ad.



CDW®
TIME HOURS
Sales 7:00-9:00 CST Mon-Fri
9:00-6:00 CST Sat.
Tech Support for Customers
8:00-7:00 CST Mon-Fri
9:00-6:00 CST Sat.

Call for
your FREE
CDW® catalog
today!



GET CONNECTED WITH A MODEM FROM CDW®

COMPUTER DISCOUNT WAREHOUSE™

Monitors	
NEC	
XV15 Plus 15" flat square	494.54
XV17 17" flat square	744.25
XE15 15" flat square	574.79
XE17 17" flat square	999.50
XE21 21" flat square	1769.26
XP17 17" flat square	1024.64
XP21 21" flat square	2148.74
MAGNAVOX	
CM2080 14" 29mm	254.31
CM4015 15" 28mm	375.84
CM4018 17" 28mm	669.25
20CM64 20" .31mm	1087.09
Samsung	
15GLI 15"	469.00
17GLI 17"	749.00
17GLsI 17"	949.00
SONY	
15sf II 15" Trinitron	499.94
17sf II 17" Trinitron	877.30
20sf II 20" Trinitron	1797.50
Multisync TC 20" Trinitron	3258.63
Radius	
PrecisionView 17"	923.78
SuperMatch 17 XL 17"	689.04
PressView 17 SR 17"	1949.34
PressView 21SR 21"	3146.75
PrecisionView 21 21"	2189.33
Graphics Video Boards	
ATI	
Xclaim GA 2MB PCI	349.91
Xclaim GA 4MB PCI	456.17
Xclaim 2MB VRAM upgrade	237.97
Diamond Technologies	
Javelin 3240XL 2MB PCI	333.97
Javelin 3400XL 4MB PCI	478.71
Javelin 2MB VRAM upgrade	178.74
Radius	
Thunder 30/1600	1147.55
Thunder 30/1152	779.00
ThunderColor 30/1600	1899.64
ThunderColor 30/1152	1535.19
PrecisionColor 8/1600	458.97
Networking	
Allied Telesyn	
Microcom Transceiver AAUI TO 10BT	36.37
Microcom Transceiver AAUI TO 10BZ	36.37
Microcom Transceiver AAUI TO Fiber ST	159.93
Microcom Transceiver AAUI TO Fiber SMA	168.97
Dayna	
Bluestreak NuBus adapter	309.05
Bluestreak PCI adapter	199.98
Bluestreak 100BTX Hub	1589.32
Farallon	
Air Dock infrared connector	84.84
FastEther TX 10/100 NuBus	319.63
FastEther TX 10/100 PCI	234.71
Ether-10-T Starlet/4 hub	116.96
Ether-10-T Starlet/8 hub	139.61
Ether-10-T Starlet/16 hub	418.89
Communications/Modems	
FastMac™	
FastMac™ 28.8 V.34	137.98
Global Village	
PowerPort fax/modems	
Mercury 19.2K/PowerBook 5XX	319.89
Platinum V.34	325.96
PowerPort PC Cards	
PowerPort Gold PC Card	174.87
PowerPort Platinum PC Card	334.82
PowerPort Platinum Pro PC Card	497.63
TelePort fax/modems	
TelePort Gold II 14.4K	104.71
TelePort Platinum V.34	194.73
Megahertz	
14.4K CruiseCard with XJACK	139.78
28.8K CruiseCard with XJACK	289.89
MOTOROLA	
Lifestyle 28.8 external	199.99
Power 28.8 external	254.78
Fractional	
14.4 external mini-tower w/fax	78.30
28.8/34 external mini-tower w/fax	167.78
MacClass PCMCIA 14.4	154.84
MacClass PCMCIA 28.8	266.78
Supra	
Express 14.4 Plus	.98.89
Express 288	154.74
288 V.34	209.00
144FB PowerBook	156.93
iRobotics	
Mac&Fax Sportster 14.4	111.41
Mac&Fax Sportster 28.8 V.34	197.89
Sportster 28.8 V.34 PCMCIA	284.73

Storage Systems	
NEC MultiSpin 6XE	515.68
Sony quad-speed external	312.72
FWB	
HammerCD 2X CD-ROM recorder	1429.84
HammerCD 4X CD-ROM recorder	2912.43
PocketHammer 2000FM	1045.64
PocketHammer 2050FM	1311.53
PocketHammer 4100FM	1769.54
PocketHammer H2000PE	1019.26
iomega	
Zip drive 100MB SCSI external	199.00
100MB Zip disk	19.95
100MB Zip disks, 3 pack	49.95
100MB Zip disks, 10 pack	149.95
SyQuest	
EZ138 external SCSI	229.00
135MB EZ138 cartridge	21.49
Magnetic media	
88MB SyQuest cartridge, 5yr	49.98
200MB SyQuest cartridge, 5yr	75.32
270MB SyQuest cartridge, 5yr	84.38
150MB Iomega Bernoulli cartridge	92.60
230MB Iomega Bernoulli cartridge	99.81
<i>Need more disk space? CDW carries Conner, IBM, Maxtor, Micropolis and Seagate SCSI hard drives. Call for details.</i>	

Input Devices	
ALPS	
Portable GlidePoint	57.14
Desktop GlidePoint	71.88
GlidePoint Keypad	107.84
GlidePoint Keyboard	114.97
ADESSO	
PowerMouse	18.79
Soft Touch Plus extended keyboard	46.99
TruForm extended keyboard	89.77
Tru-Form extended keyboard/w/pointer	99.98
Connectix	
QuickCam digital video camera	93.95
VideoPhone w/Quick Cam	147.31
EPSON	
Action Scanning System II	478.78
ES-1000C color flatbed scanner	737.77
ES-1200C color flatbed scanner	954.67
ES-1200C ProMAC color flatbed scanner	1122.02
Microtek	
ScanMaker E3	379.77
ScanMaker IIS/PX	639.38
ScanMaker IIR w/Photoshop	724.72
ScanMaker IIR w/Color IT!	573.78
ScanMaker III	1979.27
Nikon	
Super CoolScan film scanner	1979.79
Coolscan film scanner	1289.73
Polaroid	
SprintScan film scanner	1529.87
RELISYS	
Scorpio Infinity	406.53
Taurus Infinity	579.99
UMAX	
Vista-S6 MACLE2	583.33
Vista-S6 MACPRO2	658.64
Vista-S8 MACLE2	664.58
Vista-S8 MACPRO2	774.61
PowerLook MACPRO2	1899.73
Visioneer	
Visioneer Paper Port VX	356.89
Printers	
EPSON	
Stylus Color II	399.00
Stylus Color Pro	599.00
Stylus Pro XL	1799.00
HP	
DeskWriter 600	232.93
DeskWriter 660C	399.67
TEXAS INSTRUMENTS	
microLaser 600	855.71
microLaser Pro/8	1144.67
microLaser PowerPro/12	1399.91
Hewlett Packard	
DeskWriter 600	232.93
DeskWriter 660C	399.67
Memory	
Simple Technology memory upgrades	
Power Mac 9500 8500 7500 8MB	CALL
Power Mac 9500 8500 8500 16MB	CALL
Power Mac 8100 7100 6100 8MB	CALL
Power Mac 8100 7100 6100 16MB	CALL
Power Mac 8100 7100 6100 32MB	CALL
Quadra/Centris 610 Performance 630/631 4MB	CALL
Quadra/Centris 610 Performance 630/631 8MB	CALL
Powerbook 520 520c 540 540c 4MB	CALL
Powerbook 520 520c 540 540c 8MB	CALL
Powerbook 520 520c 540 540c 16MB	CALL
LaserJet 4M Plus 8MB	CALL
LaserJet 4M Plus 16MB	CALL

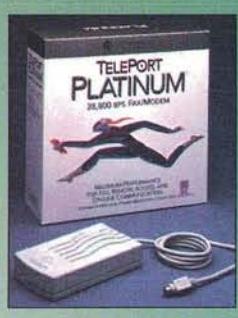
If you don't see it, call!
CDW carries the complete Simple line-up



Teleport Platinum 28.8 Kbps V.34 faxmodem

Loaded with features and backed up by a 5-year warranty, Global Village's Teleport Platinum is the premier choice for Internet and business connectivity.

- ◆ Data: V.34 (28.8 Kbps)
- ◆ Fax: 14.4 Kbps send and receive
- ◆ Features Flash ROM for easy feature upgrades!
- ◆ Included software: Power Macintosh native GlobalFax™ V2.5, GlobalFax OCR, ZTerm and America Online



CDW 52875 \$194.73

U.S. Robotics

FREE!
Internet
Valet Kit CD!



SupraExpress™ 288

The SupraExpress™ 288 offers fast, dependable 28,800 bps data, 115,200 throughput, and 14,400 bps fax—all for a terrific low price! Complete Macintosh solution includes everything you need for high-speed communications: FAXcilitate™ fax software, Microphone™ data software, and CompuServe Information Manager software and user manuals.

\$154.74

CDW 56815



Global Village PowerPort PC Cards

Gold 14.4K bps data/fax

\$174.87 CDW 60090

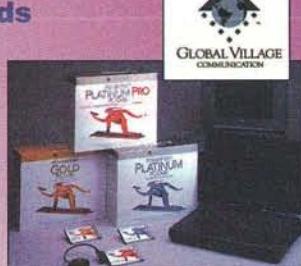
Platinum 28.8K bps data/

14.4K bps fax

\$334.82 CDW 60095

Platinum Pro 10BT Ethernet
28.8K bps data/14.4K bps fax

\$497.63 CDW 60010



Why pay
retail?
CDW® sells
for less!

Most orders
ship the
same day!

(800)509-4CDW (4239)

MW1608

Circle 2 on reader service card

©1996 CDW Computer Centers, Inc.

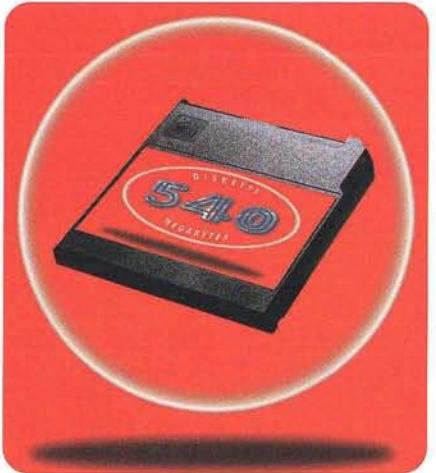
MACWORLD April 1996 195

the Great Deals



Authorized
Catalog Reseller

The New 3.5" 540 MB Diskette



Interface SCSI2

Seek Time

Track to Track	2 msec
Average	10 msec
Cache size	512k bytes

Interface Transfer Rate

Burst	10 MB/sec
-------	-----------

Sustained

Maximum	5.3 MB/sec
Minimum	2.5 MB/sec

Disk Data Transfer Rate

Maximum	8.8 MB/sec
Minimum	4.1 MB/sec

Fixed Disk Performance with All the Removability Advantages

The 540 MB MCD Diskettes have been conceived in order to respond to all your storage requirements:

Back-up your hard drive • Mail, move, transfer and share large files • Exchange files with other users • Use one diskette per project, account or client • Travel easily with all your data • Free up space on your hard disk • Store and run all your applications and entire multimedia presentations • Save large scanned or downloaded graphics, sound and video files from networks • Store on one MCD Diskette endless floppy libraries • Transfer everyday files from slower devices • Space and security copies for your kids' games and personal files • CD mastering • Read CD files at lightning speed

MCD: the most reliable, the most practical, the fastest and the most economical storage solution.

540MCD External Sub System

Includes: Power cable, SCSI cable and Utility Software \$ 579.99 #77062

540MB Diskettes - 2 pack \$ 119.99 #77290

540MB Diskettes - 5 pack \$ 249.99 #77291



THE MEMORY OF THE FUTURE



We're open to take your order anytime,
24 hours a day, seven days a week.



Order toll free: 1-800-222-2808

Enter the Dream Machine Sweepstakes

You could win this
Porsche Boxster



Call 1-800-222-2800

For Our Full Line Catalog & Get All The Details

No purchase necessary. For complete details including official rules see the MacMail catalog 57 or higher. Sweepstakes open to US residents 21 years of age or older. Void where prohibited. Car depicted is a prototype. Actual car to be awarded may vary.

Get your
FREE
catalog(s)
today!

Please Check catalog(s) you wish to receive.

- MacMail
 PC Mail
 DC Mail

Name _____

Address _____

City _____

State _____

Zip _____

OFFER CODE
MacWorld
MWD631

Mail to:
MacMail, Dept. ADV.,
2645 Maricopa St.,
Torrance, CA 90503



**Over 26000 Products
Available - If We don't have it,
Chances are Noboby Does!**

Business Leasing
For Established Businesses Only

Same Day Approvals



7500 Work Station
PowerMac 7500/100, 16-1000 CD
15" Display w/Speakers
Apple Extended Keyboard
Sale Price.....\$2985



8500 Design Station
PowerMac 8500/120, 16-1000 CD
17" Display w/Speakers
Extended Keyboard
Sale Price.....\$3995



7500 Complete System
PowerMac 7500/100 16-1000 CD
17" MultiMedia Monitor
Star Color Printer
Extended Keyboard
Sale Price.....\$3135

WWW address <http://www.primenet.com/~digicore/>

Mac Systems & Peripherals

Sales and Leasing
DigiCore, #1 Independent Mac Reseller
Unsurpassed Savings and Availability



PowerMacs

We will Custom
Configure any System
to your Spec.'s

	Buy	Lease
7200/75, 8-500 CD	1299	44
7200/75, 16-1000 CD	1695	57
7200/90, 8-500 CD	1550	52
7200/90, 16-500 CD	1750	59
7500/100, 16-500 CD	2350	79
7500/100, 16-1GB CD	2575	87
8500/120, 16-1GB CD	3550	120
8500/120, 32-1GB CD	3995	135
8500/120, 16-2GB CD	3999	135
9500/120, 16-1GB CD	3350	113
9500/132, 16-1GB CD	3799	128
9500/132, 16-2GB CD	4099	138

WorkGroup Servers

	Buy	Lease
WGS 6150, 16-700 CD	1985	67
WGS 8150, 16-1G CD *	3895	131
WGS 9150/16-2000 CD	5369	181

Performa

	Buy	Lease
Performa 5215 CD	1695	57
Performa 6200 CD	1699	57
Performa 6205 CD	1799	61
Performa 6220CD/VI/TV	1750	59
Performa 6300 CD	2399	81

Call for UnListed Models

	Buy	Lease
Radius•SuperMac	249	8
Sony•NEC•Apple	349	12
Phillips•Viewsonic	745	25
Nokia•CTX•Sanyo	815	27
Nanao•Hitachi...	1225	41
LaserWriter 4/600 PS	1899	64
LaserWriter Select 360	6299	212
LaserWriter 16/600	3699	122
Apple LW 12/600 PS w/Kit	2599	88
GCC Elite XL1208	535	18
GCC Elite XL616	995	34
HP 850c	2725	92
HP 5MP		
HP 4MV		

Monitors

	Buy	Lease
Apple 14" Multiple Scan	329	11
Apple 15" Multiple Scan	379	13
Apple MultiScan 17" 1705	699	23
Mag 17" Trinitron	785	27
AppleVision 1710AV	999	34
Apple 20" Multiple Scan	1825	62
Philips 17B	755	25
Sony 17 SF2 MultiScan	899	30
Radius PrecisionColor 17	915	31
Radius IntelliColor/20e	1925	65
Supermac Pressview 17SR	1899	64
Supermac Pressview 21SR	2895	98
ViewSonic 17GS	765	26
ViewSonic 20G	1449	49

EA Research (Endorsed by Apple)

EasyColor 24/1600	1699	56
EasyColor 24/1360	1299	43
EasyColor 24/1152	995	33
EasyColor 16/1600 PCI	599	20

Powerbooks

Targus Carry
CASE only \$39
w/PB Purchase



	Buy	Lease
190/66 8-500	1395	47
190cs/66 8-500	1775	60
520C 4-240	1399	47
5300/100 8-500	1499	51
5300/100 16-500	1725	58
5300cs/100 8-500	2199	74
5300cs/100 16-750	2675	90
5300c/100 8-500	2992	101
5300c/100 16-750	3550	120
5300ce/117 32-1.1 GB	5299	179

Scanners

	Buy	Lease
Apple Color One w/Kit	575	18
Microtek IIHR	550	19
UMAX Vista S6	599	20
UMAX Vista S8	699	24
Epson ES 1200C	998	33
Agfa StudioScan IICl	865	29
HP ScanJet 4C	899	30
Agfa Arcus II w/transp.	1850	62
UMAX PWRLook w/Trans.	1850	62

Hard Drives

	Buy	Lease
SyQuest 200 w/cart	525	17
SyQuest 270 w/cart	520	16
Apple 160 (for Powerbook)	115	4
700 Meg Apple	195	7
1 GB Conner1080	325	11
1 GB Apple	345	12
2.1 GB Quantum Empire	650	22
2.4 GB Seagate Barracuda	875	29
4.3 GB Micropolis (7200)	1425	48
4.3 GB Seagate Barracuda	1495	50
9 GB Seagate Fast SCSI-2	2699	97
9 GB Micropolis	2599	88
External Hard Drive (w/SCSI Cable)	79	

Arrays from FWB

	Buy	Lease
(PCI or NuBus)		
SledgeHammer 2000	1549	52
SledgeHammer 4100	2675	90
SledgeHammer 8200	3520	119
SledgeHammer 17400	5625	190

DAT from FWB

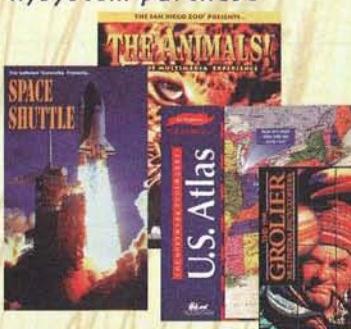
(Bundled with Retrospect)	
HammerDLT Blank Tape	75
HammerDAT4000	1189
HammerDAT8000	1345
HammerDAT48G*	3199
HammerDLT15G	4175
HammerDLT20G	5515
HammerDLT100G*	8750

*Autoloader

CD Recordable & MO

Pinnacle Travel-Pak	119	5
Pinnacle Tahoe 230	725	25
FWB HammerCD w/Toast	1350	46
Pinnacle RCD 1000	1525	51
Pinnacle 1.3 GB Sierra	2175	73
Yamaha CDE 100 w/Toast	2399	88
Pinnacle 2.6 GB Sierra	4275	144

FREE 14 CD Bundle
w/system purchase



Order Toll-Free

800-858-4622

International & Dealers

818-785-2800

In California

800-858-0311

digicore@primenet.com

24 hr FaxLine

818-785-3100

E-Mail

digicore@primenet.com

Circle 269 on reader service card

C.O.D.

Wire Transfers

Corporate POs

MasterCard

American Express

Card

VISA

Discover

BankAmericard

Master Charge

Due to publication time constraints prices may vary.
Please Call for Current Pricing • No Sales Tax EXCEPT in CA.
All Prices Reflect CASH (COD) DISCOUNT!
All products listed are New & Carry full MFR. Warranty.
Possible Restocking Fee on Non-Defective Returns.
All Returns/Repairs require an RMA Number.
Lease Programs Vary — Details are available via Fax or Phone.

DigiCore Inc. 15500 Erwin St. • Van Nuys CA 91411

198 April 1996 MACWORLD

Since
1985

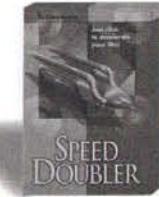


IMS Twin Turbo 4MB Video Upgrade **\$369**



TelePort Platinum **\$192**

Speed Doubler **\$48**



16 MB Memory **\$439**



Power Mac 8500 16/1GB/CD **\$3799**

No
Credit Card
Surcharge

Global Village



Teleport Platinum	192
Teleport Gold II	119
Powerport Gold PC	182
Powerport Mercury PB500329	
Powerport Platinum PC	335
Powerport Platinum Pro	489

UMAX



Vista S6	519
Vista S8	629
Vista S12 full Photoshop 869	
PowerLook II	2750
Business Card Reader	219
PageOffice	299

PowerClock



Accelerate your Power Mac. Toll-free tech support. 30 day mbg. Snap-on installation. No motherboard changes. Fan. PowerMac 6100/84MHz...59 PowerMac 7100/84MHz...69 PowerMac 8100/133MHz 79 72/75/8500call

Apple Systems



7200	from 1498
7500 /1GB	2799
8100/100 8/700	2188
8500 /1GB	from 3799
9500/132 16/1GB/CD 4408	
9500/132 16/2GB/CD 4409	

Ordering



BOTTOM LINE ON-LINE Prices ■ Sales

See our extensive
Web catalog at:
<http://www.blol.com/bld/>
Toll Free ■ Fax
International ■ Email
Secured Web Ordering

Video



DISPLAYS	
Apple 1705	739
Apple 1710	call
ArtMedia 17" Sony	936
DiamondPro 21TX	2115
DiamondScan 20	1741
NEC 17"	795
Philips Monitors	call
Radius Pivot 1700	969
Radius PrecisionView 17" 875	
Radius Intellicolor 20e	1949
Radius PressView 21SR 3199	

DIGITAL VIDEO

Spigot II Tape	549
Targa 2000	2715
VideoVision	call

DISPLAY CARDS

Number Nine	call
IMS 2MB Card	369
IMS 4MB Card	569
Radius PCI	call
ATI Xclaim	369
Focus 16bit w/ethernet ..	386

Input/Output

MODEMS

Supra Express 288	159
Supra v.34 28.8	211
U.S. Robotics	215
Prometheus Cyberphone ..	165
Supra 28.8 PowerBook ..	239
Supra 14.4 PowerBook ..	161
Cruise Card 28.8	297
Netlink PC Cellular	269

DRIVES

All Seagate AV Drives	call
Conner 1GB Wide ..	269/369
Conner 1GB 10ms ..	249/349
DeskStar 1GB	299/399
Quantum 1GB	269/369
Quantum 730MB	199/299
Magic Syquest	399
SyQuest EZ135	225
ZIP 100MB	199

MEDIA

230 Optical	25
128 Optical	14
Syquest 200/270	75/57

Input/Output

SCANNERS

Agfa Arcus II	1925
Agfa StudioScan IISi	909
Epson 1200c	from 999
HP 4C	999
Kodak DC40 Camera	699
Microtek	call
Nikon SuperCoolScan	1999
Visioneer PaperPort	269

PRINTERS

Apple 360	769
Apple 4/600	869
Apple 16/600	2199
Epson 11x17	1799
Epson II	499
Fargo Dye Sub	1399
Gcc Elite from	2349
Hewlett Packard	call
Kodak DC40	call

Systems

SYSTEMS

6100/66 8/500/CD	1329
7100/80 8/700	1399
8100/110 8/700	2188
PB 5300	1799
PB 5300CS from	2349
PB 5300C from	3299
Powerbook 190 8/500 ..	1870
Powerbook 190cs	

RAID COMPONENTS

Atto PCI SCSI	329
FWB Raid Software	299
FWB Jackhammer PCI	359
CD	
2x CDR	999
Magic 12X 1 CD	439
NEC 6X CD	579
FWB CDR	1468
Pinnacle CDR	1325

VRAM

256K/512K	19/39
PCI VRAM 1MB	79
PCI Cache 256	199
256K/512K Cache ..	129/299
POWERBOOK 190/5300	
8/16/32	349/649/1199
POWERBOOK 160/165C/180/180C	
6/8/10	225/299/399
POWERBOOK DUO	call

All memory backed by a lifetime warranty.

Memory



Call for current pricing.
DIMMs

8/16MB DIMM	229/459
32/64MB DIMM	899/1899

30 PIN SIMMS

1/2MB SIMM	25/75
4/16MB SIMM	129/479

72 PIN SIMMS

4/8MB SIMM	117/236
16/32MB SIMM	439/939

POWERBOOK

All models	call
------------------	------

VRAM

256K/512K	19/39
PCI VRAM 1MB	79
PCI Cache 256	199
256K/512K Cache ..	129/299
POWERBOOK 190/5300	
8/16/32	349/649/1199
POWERBOOK 160/165C/180/180C	
6/8/10	225/299/399
POWERBOOK DUO	call

All memory backed by a lifetime warranty.

BOTTOM LINE

DISTRIBUTION

1-800-990-5794

US & Canada

Circle 63 on reader service card

MACWORLD April 1996 199

Get Free Shipping When You Order On-Line. Surf to: <http://www.blol.com/bld/>

BOTTOM LINE ON-LINE
Prices ■ Inventory ■ Sales
email: sales@blol.com
See our catalog at:
<http://www.blol.com/bld/>

4/96 MW Hours: M-F 9-9 | Sat 9-4



Authorized
Catalog Reseller

MacWAI

NEC MONITORS as low as \$499!

NEC XV15 15" Monitor... MON 0102 ... \$499
NEC XV17 17" Monitor... MON 0104 ... \$829
NEC XE21 21" Monitor... MON 0106 ... \$2099

POWER MAC
DIMMs
AS LOW AS
\$389
EACH



4 Ways to Order:

1. Call 1-800-255-6227
2. FAX: 1-908-905-9279
3. CompuServe: GO MW

NEW! MacWAREHOUSE®
is now on the
Internet

Now you can order your favorite
Macintosh products on the 'net'!

- ✓ Hundreds of shareware and demo titles for you to download!
- ✓ Latest information on the newest products!

<http://www.warehouse.com>

1. Our customer service staff is ready to take your order 24 hours a day, 7 days a week.

2. We accept the following major credit cards: Visa, MasterCard, Discover, AmEx. Your credit card will not be charged until each item is shipped (no surcharge).

3. CT, NJ, and OH residents add applicable sales tax.

4. Shipping charge for orders under 10 lbs. is \$3.00. Orders over 10 lbs. are \$1.00 per pound or fraction thereof.

5. Place your order for "in-stock" items up to 12:00 midnight (ET) (weekdays), and we will ship same day for overnight delivery (barring system failure, etc.).

6. We use Airborne Express, unless UPS Ground offers overnight delivery to your area. (Some areas of the U.S. require more than one day delivery.)

7. Many of our products come with a 30-Day Money Back Guarantee. If, for any reason, you are not completely satisfied with your purchase of any of these items, call our Customer Service Department at 1-800-925-6227 for a Return Authorization Number and a full refund of the original purchase price of the item, excluding shipping and handling charges. Ask our operator at the time of ordering if the product is covered by the Money Back Guarantee. You must return the undamaged product at your expense, including all its packaging and documentation and the blank warranty card if applicable. All items we sell come with the MacWAREHOUSE

30-DAY
Guarantee
Against Defects

If your product is defective in any way, all you have to do is call our Customer Service Department for a Return Authorization Number. Defective software will be replaced upon receipt of the defective product. Defective hardware will be replaced or repaired at our discretion.

© Copyright 1996 Micro Warehouse, Inc. MacWAREHOUSE® is a division of Micro Warehouse, Inc. MacWAREHOUSE® and MicroWAREHOUSE® are registered trademarks and DataComm WAREHOUSE and MacSystems WAREHOUSE are trademarks of Micro Warehouse, Inc. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc. Item availability and price subject to change without notice. We regret that we cannot be responsible for typographical errors.

We carry over 6,000 products for your Mac!

Speed Doubler,
RAM Doubler &
Conflict Catcher
all 3 only **\$99.95**



Shipped in promotional packaging.

Supra FAXModem
288 V.34 only
\$229.95

A great
time and
money saving
solution for all
your data and fax
communications!



DMD 1377

Power User 200MB
Removable Drive

- Reads & writes 44MB, 88MB, & 200MB cartridges!
- Ideal for archiving & transporting!
- Removable for unlimited storage!



drive only
\$399

Ask for item# DRI 0940

*Drive only

5.25" SyQuest Removable Cartridges

Item #	Size	Qty. 1-4	Qty. 5-9	Qty. 10+
MED 0035	44MB	\$59.95	\$54.95	\$49.95
MED 0071	88MB	\$64.95	\$59.95	\$54.95
MED 0146	200MB	\$89.95	\$84.95	\$79.95

MacInTax and Quicken
together only **\$54.90***



Ask for item# BND 0987

*Price reflects \$5 manufacturers mail-in-rebate for MacInTax. Price before rebate is \$59.90. \$25 savings based on MacInTax & Quicken prices as of this printing.

QuarkXPress 3.32

only
\$659.95

PLUS 2 FREE
BONUSES!

QuarkXPress 3.32 for
Mac/Power Mac
DTP 0164 (CD-ROM).
Includes QX-Tools &
PhotoDisc Sampler
(shipped in
promotional packaging).

QuarkXPress

QuarkXPress

NEW!

Zip Drive Deluxe Kit

Iomega Zip Drive Starter Kit includes:
• Iomega 100MB Removable Zip Drive
• Five 100MB cartridges
• Driver software
• Zip Drive carrying case

only
\$299

*Utility software included on first cartridge.



Ask for item# BND 0862

4x CD-ROM Drive
as low as **\$199.95***



Ask for item# BND 0850

Ask for item# BND 0982

While supplies last.

Ask for item# BND 0982

REHOUSE®

Plus a full line of Macintosh™ computers!

EZ 135MB SyQuest Drive
drive only \$229⁹⁵
Ask for item# DRI 1129

135MB 3.5" Removable Cartridges as low as \$24^{95*}
With quantity discounts
Item # Qty. 1-4 Qty. 5-9 Qty. 10+
MED 0166 \$29.95 \$27.95 \$24.95*

HP DeskJet 855c



Ask for item# INP 0543

- 300dpi color printing
- 600 dpi B&W printing
- Prints 7 B&W pages/min.
- Prints 3 color pages/min.
- Mac & IBM compatible

\$549

POWER USER
1GB HARD DRIVE
only \$399
Ask for item# BND 0935

Adobe PhotoDeluxe
NEW!
Easily modify and personalize your own photos!
\$89⁹⁵
Ask for item# GRA 1258

To order call toll-free 24 hours a day, 7 days a week
1-800-255-6227

FREE CATALOG SUBSCRIPTION! Check the appropriate box(es) to receive your FREE 1-year catalog subscription(s) and mail this coupon to: 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name _____

Address _____

Apt. _____

City _____

State _____

Zip _____

(Expect to receive your first issue(s) within 4-6 weeks.)

Yes, send me my FREE Power User's Tool Kit. Enclosed is my check for \$2.00 to cover shipping & handling.

MacWAREHOUSE MicroWAREHOUSE Data Comm WAREHOUSE MacSystems WAREHOUSE

Adobe PageMill & Adobe SiteMill



Adobe PageMill lets you create and maintain great-looking pages on the World Wide Web.
COM 0325 \$99⁹⁵

Adobe SiteMill Upgrade from PageMill
UPG 0234 \$299⁹⁵

Adobe SiteMill is the MOST comprehensive way to manage your Web site!
COM 0343 \$399⁹⁵

Requires: 3MB hard disk space; System 7.0 or later; color monitor.



Upgrade to Adobe Illustrator 6.0

Be more creative with this exciting new version!

	6.0 Upgrade from version 5.0 or later UPG 0222 CD-ROM only \$99.95
	6.0 Upgrade from version 5.0 or later UPG 0223 CD-ROM/Disk \$129.95
	6.0 Upgrade from 3.2 or earlier UPG 0220 CD-ROM \$99.95
	UPG 0221 CD-ROM/Disk \$129.95

Adobe Illustrator

MacWAREHOUSE BEST SELLERS

Product & Item#

SoftWindows 2.0 for PowerMac

Ask for item# COM 0290 (CD-ROM) \$299.95

RAM Doubler & Norton Utilities

with FREE Marathon!

Ask for item# MSB 0045 \$99.95

Adobe Illustrator 6.0

Ask for item# GRA 1254 \$389.00

Microsoft Office 4.2.1

Ask for item# BND 0779 \$279.00

RayDream Designer 4.0

Ask for item# GRA 1203 \$99.95

Stuffit & Conflict Catcher

Ask for item# MSB 0040 \$69.95

Hayes Accura 288 V.34

Ask for item# DMD 1491 \$215.95

Macromedia Director 4.0

Ask for item# GRA 1259 \$819.00

FileMaker Pro 3.0

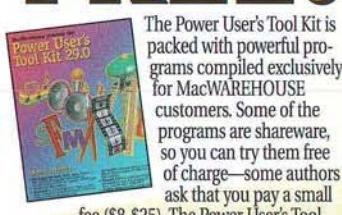
Ask for item# DAT 0164 \$199.95

HP LaserJet 5MP

Ask for item# INP 0481 \$1099.00

Get a Power User's Tool Kit®

FREE!



The Power User's Tool Kit is packed with powerful programs compiled exclusively for MacWAREHOUSE customers. Some of the programs are shareware, so you can try them free of charge—some authors ask that you pay a small fee (\$8-\$25). The Power User's Tool Kit is FREE when you order from MacWAREHOUSE. You pay only \$2.00 shipping and handling. If you would like the disk, please ask for item # AAA 0161. All programs work with System 7.

FREE CATALOG!

Memory Upgrades
as low as \$49⁹⁵ EACH
1MB, 30 pin, 80ns

We'll install your SIMMs for only \$29.95 extra when you purchase your CPU and SIMMs at the same time. Orders must be placed by 8pm (EST) for overnight delivery. Ask for item # INSTL01



MW0496

Circle 150 on reader service card

MACWORLD April 1996 21

AWARD WINNING PRODUCTS

DISPLAYS

TWENTY ONE INCH DISPLAYS



21" Inch DiamondTron Monitor
 from \$1999*
 • Rated Superior to Trinitron
 • Largest Aperture Grille monitor available
 • Up to 1600x1200 on Macs and PCs
 • Full Digital Control from Keyboard

Radius SuperMatch 21 TXL from \$1699*
Radius PrecisionView 21 \$CALL
Radius PressView 21sr from \$2899*
SuperMac PressView 21 "Editors Choice" \$1999*

Radius PrecisionColor Display 21
 • 1600x1200 to 1024x768
 • Razor sharp dot pitch
 • Best for color accuracy
 Compare of \$2399 • Selectable color temperatures
RasterOps SuperScan MC 21 \$CALL
Radius Multiview 21 \$CALL
Radius 21 inch Grayscale Display \$799
 *With qualifying videocard, accelerator, or computer purchase



\$1499
 • 1600x1200 to 1024x768
 • Razor sharp dot pitch
 • Best for color accuracy
 Compare of \$2399 • Selectable color temperatures
RasterOps SuperScan MC 21 \$CALL
Radius Multiview 21 \$CALL
Radius 21 inch Grayscale Display \$799
 *With qualifying videocard, accelerator, or computer purchase

TWENTY INCH DISPLAYS



TWO PAGES FOR THE COST OF ONE!
 While Supplies Last!—Your Choice of...
Retail \$1999 **SuperMac SuperMatch 20 PLUS** \$1099*
\$999* • Up to 1152x870 resolution
 • Advanced Digital Controls
 • Non-glare, Dynamic-Focus CRT
 Best Screen Uniformity!

Radius PrecisionColor 20v \$1099*
Digital 20 inch Display Up to 1280x1024 \$1399
RasterOps 20 Multimode \$1299
Radius PrecisionColor 19 \$899



from \$1499*
 • MacUser, MacWorld,
 MacWeek Editor's Choice
 • 1600x1200 to 640x400
 Retail \$2399

Apple Multiple Scan 20 Display \$CALL
Ikegami 20 inch Grayscale Display \$699
Radius 20 inch Grayscale Display \$699

*With qualifying videocard, accelerator, or computer purchase

SEVENTEEN INCH DISPLAYS



SuperMac/E-Machines T16II
 Compare at \$1299
\$599* • High Grade Studio Trinitron Series
 • .25mm multi-resolution • Editors Choice
 • 1024x768 to 640x480 resolutions
SuperMatch 17T \$799*
PrecisionColor Display 17 from \$899
PrecisionView 17 \$CALL
Radius PressView 17sr MW ***** \$CALL
SuperMac SuperMatch 17 from \$499*
 *With qualifying videocard, accelerator, or computer purchase



\$399*
Radius Color Pivot LE
 We have cards for SE/30, LC, IIsi, Nubus, and Quadras
 *With purchase of video card.

PrecisionColor Pivot \$599
Grayscale Pivot \$399
Radius Full Page Display \$CALL
Apple Portrait Display \$399
Portrait Displays Labs 1700 \$CALL
E-machines ColorPage 15 with NUBUS card \$499

COLOR MANAGEMENT

SuperMac Display Calibrator \$299
SuperMac Display Calibrator PRO \$499
Radius Mac ProSense Calibrator \$799

VIDEO CARDS

1600x1200 PCI & NUBUS

Radius ThunderColor 30/152 & 1600 \$CALL
IMS Twin Turbo 128M (4MB with MPEG) \$599
Radius PrecisionColor 8/1600 \$499
EAsycolor 1600/16 \$CALL
Radius Thunder II GX 1360 & 1600 from \$999
Radius Thunder IV GX 1360 & 1600 from \$1599
Radius Thunder 24/GT (accepts PhotoEngine) \$CALL



21" RESOLUTIONS

Radius PrecisionColor Pro 24X \$699
Thunder 8 "Fastest 8 bit card ever" \$CALL
Thunder 24 (DSP available) \$CALL
Radius LeMans GT \$799
SuperMac Ultura LX* from \$899
RasterOps Horizon 24* from \$999
RasterOps 24XLTV \$1999
RasterOps Prism GT \$CALL
Radius PrecisionColor 8XJ \$499
 *DSP Available



20/19" RESOLUTIONS

SuperMac Spectrum 24 Series V \$599
Radius PrecisionColor Pro 24XK \$CALL
SuperMac Futura MX \$499
RasterOps PaintBoard Lightning \$CALL
SuperMac Spectrum 8 \$199
PowerView/SuperView for Powerbooks \$199/\$299

17/16" RESOLUTIONS

Radius 24 bit video cards from \$199
Radius PrecisionColor Pro 24XP \$CALL
SuperMac Futura SX \$299
RasterOps 24 MX \$399

PHOTOSHOP ACCELERATION

"If you frequently need to retouch large image files in Adobe Photoshop using such filters as Gaussian Blur, Sharpen, and Emboss, then you need either to have the patience of Mother Teresa or a digital signal processor (DSP) board." —Macworld

Radius PhotoEngine

from \$399

- Four AT&T 3210 66MHz DSPs
- Accelerates Photoshop Filters
- Up to 15x acceleration on all Macs
- MacUser Editor's Choice
- Available in Daughtercard or NUBUS versions



Standard video cards do not provide acceleration for many critical Photoshop functions, because they do not have onboard Digital Signal Processors (DSPs). When installed in your system, DSPs are used by Photoshop to process time consuming commands more than 10-times faster than built-in video.

Greatest Improvement Areas:

- Filters such as those in the Sharpen and Blur submenus
- Mode conversions such as RGB to CMYK color separations
- Image transformations such as rotations, effects, and resizes.

Radius PhotoBooster (NUBUS or Rocket/PDS) \$199
SuperMac ThunderStorm DSP Boards \$299
Radius Color Engine for Thunder 30 Cards \$CALL
Radius PhotoEngine Nubus \$CALL
Adobe Photoshop 2.5 Deluxe CD Edition \$CALL
RasterOps Paintboard DSP Upgrades \$CALL
Radius GX (CMYK acceleration) Upgrades from \$349

800/375-9000

PRINTERS

We have purchased excess printer inventories DIRECT from the manufacturer, so you can save over 50-75% on most of our current printers. DO NOT WAIT, as quantities are extremely limited and supplies will NOT last!!

COLOR LASER PRINTERS

Color Laser Printers are the best choice for printing text, graphics and color. They use a similar printing process to monochrome printers and output on standard laser paper, which means your prints will not fade or crease. The cost to add color to your documents is now only a few cents more per page. For a LIMITED TIME ONLY, you can purchase a Color Laser Printer for under \$2,000--call now to order!!

QMS Magicolor

• Internal SCSI drive from \$2999
 • Flexible 300 or 600 dpi
 • Blazing 33 MHz RISC processor
 • PostScript Level 1, 2 and HP/PL-5
 • Only Color Laser Choice for envelopes

\$2999



QMS ColorScript 1000

Tektronix 540 Plus \$CALL
 Apple Color Laserwriter 12/600PS \$6279
 Xerox 4900 series Color Laser from \$5589

TWO PAGE COLOR PRINTERS

11x17 Tabloid Color Printers from \$2999
 SuperMac Proof Positive dye sub \$SPECIAL
 Fargo Pictura 310 Color Printer \$CALL
 • Up to 12"x18" output
 • Dual-function dye sub and wax thermal
 • Editors Choice
 QMS ColorScript 210/230 \$CALL
 • Up to 11x17" full-bleed output



TABLOID LASERS

QMS 860 Hammerhead 600-1200dpi

• 11 x 17 full bleed from \$1199
 • PostScript Levels 1&2
 • 8ppm heavy-duty Canon engine
 • Powerful RISC processor
 Hewlett-Packard 4mv \$CALL
 GCC SelectPress 1200x1200dpi \$4999
 22ppm QMS PS2210/2220 \$1499/\$1699



HOME/OFFICE

360 DPI Color Printer

\$199

Star SJ-144MC
 • Full-Color output at crisp, laser-quality 360dpi Printer
 • Heat Fusion process avoids ink-jet smear
 • 2-year Manufacturer's Warranty
 • ADD box of 3 Color Cartridges (\$57 value) only \$29
 * With purchase of any other item in ad



Hewlett-Packard 5mp

Apple Laserwriter Select 360 \$CALL
 QMS 815/815mr 8ppm, 600dpi \$699/\$999
 QMS PS 825/825mr 600dpi \$799/\$1099
 QMS 1060 10ppm, 600dpi \$1299
 QMS PS 1500 15ppm \$1999
 QMS PS 1700 17ppm, duplex optional \$1999
 Apple OEM Laserwriter 8ppm \$499
 Seikosha SP-2400AP dot matrix \$179
 Apple Imagewriter/Stylewriter \$CALL
 GCC WriteMove/WriteMove II \$149/\$249



New and Reconditioned Models of Most Items Available



AT OR BELOW DEALER COST!

CPU SPECIALS

POWER MACS

NUBUS POWER MAC SPECIALS*

PowerMac 6100 8/350/CD from \$999
 PowerMac 7100 8/700/CD from \$1499
 PowerMac 8100 16/1GB/CD from \$2699
 Radius 81/110 \$CALL

PCI POWER MACS ALL AVAILABLE

*With Qualifying Card And Monitor Purchase
 All in stock \$CALL for lowest prices



QUADRA BLOWOUT!

Quadra/Centris 610 8/80/CD \$699*

- Powerful 040 processor
- Multi-media ready with internal CD-ROM
- Built-in video supports up to 21" color monitors
- Software bundle with ClarisWorks, CD titles

Add 486DX/66MHz DOS Card only \$399

Macintosh Quadra 605/LC475 \$599

- NEW CPU, with 4MB RAM and 250MB HD
- Powerful 040 processor
- Radius Full Page Display
- Apple Design Keyboard
- ClarisWorks

Add Radius Card for Display to TV only \$99

Quadra 950 8/500, NEW \$1399*

Quadra 840AV 8/500/CD NEW BUILD \$1699*

Quadra 650 4/250/CD \$CALL

*with purchase of any qualifying monitor or video card



MAC II SERIES SYSTEMS

Mac IIx Color Pivot System \$299

- Macintosh IIx with 5MB RAM/80MB HD
- Radius Color Pivot Display

• Extended 105-key Keyboard \$799

• FREE ClarisWorks! Complete

Add Radius Card for Display to TV only \$99



Mac IIcx 15" Color System \$275

- Macintosh IIcx with 4MB RAM/80MB HD
- E-machines ColorPage 15" Display
- NUBUS accelerated video

• Extended 105-key Keyboard \$849

• FREE ClarisWorks! Complete

Add MacRecorder to Mac IIcx only \$99



Macintosh II 4/40 w/video card installed \$299*

Macintosh IIci 4/80 w/cache card installed \$399*

Macintosh IIcx 4/250 50MHz upgrade available \$499*

Add Apple Cache Card to Macintosh IIci \$39

*with purchase of any qualifying monitor



Mac Plus System w/Keyboard & Mouse only \$149

Macintosh SE30 from \$299

ADD an External Modem to any CPU \$49



POWERBOOKS

PowerBook 5300 series \$CALL

PPC Upgraded Color PowerBooks from \$2299

PowerBook 520c from \$1499

PowerBook 190 series \$CALL

PowerBook 160/180 from \$999

PowerBook Duo 210/230 from \$699

PowerBook Duo 270c/280c \$CALL

Ethernet Dock for Powerbook Duo's \$399*

Apple Duo Docks from \$499*

Add GCC WriteMove II portable printer \$199*

*with purchase of a PowerBook



CPU UPGRADES

Daystar PowerPC and 040 Accelerators \$CALL

Radius Rockets 33MHz to 40MHz from \$399

Stage Two Rocket 40MHz w/FPU \$699

-Includes SCSI II Booster and RocketShare

Rocketshare multiprocessing software \$299

Speed upgrades for all 680X0 and PPCs \$CALL



800/375-9000

Circle 20 on reader service card



DIGITAL VIDEO

Video Vision Studio 2.5.1 \$1999*

- 24bit Full-Screen, Full-Motion Video
- Includes Adobe Premiere and VideoFusion
- Breakout bar supports dual input

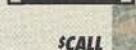
*with purchase of Studio Array



Video Vision Studio Array \$1999

- 4GB RAID Customized for Video Vision
- Includes FWB Jackhammer SCSI accelerator

TRUEVISION Targa 2000 PCI/NUBUS



\$CALL

RasterOps 24XLT \$1999

RasterOps 24STV \$999

RasterOps 24MXTV \$CALL

RasterOps MoviePak II JPEG Daughtercard Upgrade \$CALL

Spigot II Tape Now Bundled with Adobe Premiere \$499

Apple PowerMac AV Card \$CALL

VideoSpigot Cards NUBUS/LC/IIsi \$CALL

Radius Spigot Power AV \$799

*With purchase of Adobe Premiere

DRIVES

1.0GB OPTICAL FOR THE COST OF 230 MB!

Don't bother building a library of tiny 44, 200 or 230 MB optical and Syquest cartridges. After buying only 10 1.0GB cartridges your savings will pay for this drive.

MAXOPTIX 1.0GB MO from \$599

- 1MB Cache, 9x more than 230 MB Optical Drive
- Maximum Reliability with 25 year operating life
- Reads 650MB and WORM cartridges

Pinnacle Micro APEX 4.6GB Optical Drive \$CALL

Pinnacle Micro CD-Recorders \$799

NEC 4x External CD-ROM Multimedia Kit \$249

NEC 3x External CD-ROM Multimedia Kit \$199

Apple or NEC 2x External CD-ROM Multimedia Kit \$179

Fujitsu 1.2GB HD Wide (Ext) w/system \$349

Seagate 2.4GB HD fast & Wide Barracuda (Ext) \$899

Iomega ZIP, JAZ drives from \$199

Apple 250mb HD internal/external \$125/\$200

Apple 350mb HD internal/external \$175/\$250

Dyna 360K/1.2mb-740K/1.44mb \$499

Exabyte 8mm 5gb tape backup \$999

NEC CDR 72/73/74 CD drive \$99/\$199/\$299

Apple FDHD auto insert floppy \$199

FWB Jackhammer SCSI accelerator PCI \$399

FWB Jackhammer SCSI accelerator NUBUS \$499

Daystar SCSI PowerCard accelerator NUBUS \$299

COOL STUFF

NETWORKING

WGS 6150 16/500CD/AppleShare

\$2499

WGS 8150 16/1GB/CD/DAT/AppleShare

\$3999

Apple Token Ring NUBUS cards

from \$299

DCA Mac Irma 3270

\$499

DCA Irma 3270 for Mac SE

\$499

Shiva FastPath 4 Gateway

\$999

EtherNet boards for SE, SE/30

from \$99

Asante & Daystar EtherNet boards for LC's

\$299

Daystar SCSI/Link External Ethernet Adapter

\$299

E-machines ColorLink DC/8-bit graphics, 10BT ethernet

\$199

E-machines ColorLink EX/T 24-bit to 640x480, 10BT ethernet

\$299

E-machines Futura II SX/T 24-bit to 832x624, 10BT ethernet

\$399

E-machines ColorLink SX/T 24-bit to 1024x768, 10BT ethernet

\$499

CARDS & MONITORS

Apple 8x24 GC

\$449

RasterOps 104 24bit card for Two Page Displays

\$299

RasterOps 24XLi (3MB, expandable to 16MB)

\$599

RasterOps 24L with 801

\$699

RasterOps 708-8bit for 20" monitors

\$299

Daystar NUBUS RAM Expansion Card

\$199

E-machines T19 Card for SE30/IIsi

\$299

E-machines ColorPage 15" monitor & video card

\$499

E-machines Big Picture 17" gs monitor & card

\$499

CRA Systems, Inc.

300 South 13th St., Waco, TX 76701

Monday thru Friday 9AM to 8PM CST - Saturday 10AM-4PM Sales Dept. Only

Domestic Sales 800.375.9000 Fax 817.750.9050

Consultants/Dealers 817.754.2120 International Sales 817.754.2120

Prices reflect 2% cash discount. Prices subject to change. Not liable for typographical errors. All shipping charges for COD orders to be secured by credit card.

Dealers and consultants call for quantity pricing. We ship anywhere.

Since 1986, CRA Systems has been offering a great selection of new and factory clearance technology products. Most of these items have been offered at or below dealer cost due to volume purchases direct from the manufacturers.



DISCOUNT PRICES ON QUALITY HARDWARE, SOFTWARE & ACCESSORIES

MAC BARGAIN\$™

Buy with Confidence Online from MAC BARGAINS.

- NEW! To place an order, e-mail to mac.bargains@mzi.com
- NEW! For detailed product information, e-mail to mac.bargains.info@mzi.com
- Over 2500 products in stock

Great Deals!



As Low As
\$2869

PowerComputing is here!
Mac-compatible, PowerPC™ performance for less!



**HP LaserJet
5MP**

Only
\$1049

- 600x600 dpi resolution
- Individual or shared use
- Flexible paper handling
- Prints up to 6 pages per minute
- Includes 35 Adobe Type I fonts, 75 TrueType fonts on disk
- 350 sheets input, 100 sheets output
- For more information, e-mail keyword HP5MP

Hewlett-Packard #23786

**DayStar
Power Cache
50MHz
W/FPU**



Only
\$278

- Super performance for all software applications
- High-speed math performance
- Completely universal/transportable – it's %100 compatible with 20 different Mac platforms
- For more information, e-mail keyword POWERCACHE

DayStar #04322

ACI US

89421	4D Software Development Kit	\$2,249.98
95355	4D First 1.2...	\$94.98
88885	4D Server 1.X to 1.5 Version Upgrade	\$349.98
88882	4th Dimension 3.5	\$579.98
88883	4th Dimension 3.x - 3.5 Vers. Upgrade	\$224.98

Adobe Systems

89675	Acrobat Exchange 2.1	\$128.98
89677	Acrobat 2.1 for Workgroups	\$999.98
06263	Dimensions V.2.0	\$121.98
95314	Fetch V.1.2 Single-User	\$93.98
06994	FrameMaker V.5.0 Upgrade	\$198.98
03582	FrameMaker V.5.0...	\$552.98
92217	HomePublisher V.2.0 Deluxe CD	\$48.98
88205	Illustrator V.5.0 to V.6.0 Upgrade CD	\$98.98
88206	Illustrator V.6.0 CD & 3.5"	\$364.00
91255	PageMaker 6.0 Upgrade	\$139.98
91256	PageMaker V.6.0 MacPowerMac	\$545.00
88414	PageMill 1.0...	\$95.98
91618	Persuasion V.3.0 MacPowerMac	\$239.98
87623	PhotoDeluxe	\$72.98
04042	Photoshop 3.0.5	\$544.98
95341	Photoshop 3.0.5 Upgrade	\$157.00
04670	Premier V.4.2	\$484.98
91600	Print Center 4.0	\$438.98
03971	Streamline 3.1...	\$122.98
03950	Type On Call 4.1	\$42.98

Aladdin

98501	SitComm	\$61.98
05287	StuffIt Deluxe 3.5	\$95.98

Asoft

00618	DiskExpress II 2.2	\$42.98
04543	Master Juggler 1.9	\$31.98

Avid Technology

98489	Elastic Reality for Power Mac	\$228.98
93890	VideoShop 3.0...	\$239.98

03552	Avery MacLabel Pro	\$45.30
-------	--------------------	---------

Best!Ware

04712	MYOB Accounting V.6.0...	\$78.98
99042	MYOB Accounting V.6.0 w/Payroll	\$132.98

Cores

05161	OmniPage Direct V.2	\$58.11
01005	OmniPage Pro V.6.0	\$448.98
91304	OmniPage Pro V.6.0 Upgrade	\$148.98

Cosdy & Greene

91300	Conflict Catcher 3...	\$59.00
-------	-----------------------	---------

Claris

18052	ClarisDraw	\$184.98
93424	ClarisWorks V.4.0	\$117.98
92638	ClarisWorks V.4.0 Ver/Comp Upgrade	\$64.98
88830	FileMaker Pro V.3.0	\$188.98
88829	FileMaker Pro V.3.0 (Ver/Comp Upgrade)	\$94.98
06525	MacWrite Plus	\$88.98

Connectix

05646	PowerBook Utilities	\$53.98
96785	RAM Doubler v1.52	\$53.98
90375	Speed Doubler	\$53.00
90149	RAM-Speed Doubler Bndl	\$75.00

Corel

95331	Corel GALLERY 1...	\$31.98
91628	Corel GALLERY 2...	\$63.98
92234	Corel Stock Photo Library 1	\$899.98
91276	Corel Stock Photo Library 2	\$899.98

Datawatch

02023	Cricket Graph III	\$84.98
-------	-------------------	---------

Dantz

04722	DiskFit Pro V1.1	\$68.98
02586	Retrospect V.3.0...	\$134.94
04194	Retrospect w/ Remote 10-Pack	\$259.98

Datawatch

02077	Virex V.5.6	\$59.45
-------	-------------	---------

Dataviz

96907	MacLink Plus/PC Connect 8.0...	\$113.98
96908	MacLink Plus/Translators Pro 8.0	\$93.98

Norton Utilities V.3.2 Upgrade

#93976

Only \$38.98

Only \$95.98

Only \$95.66

For the Best Deals Around!
1-800-619-9091

COMPUTERS

Power Computing	
Powerwave 604/120 8/16/CD Desktop	\$2,869.00
Powerwave 604/120 8/16/CD Desktop	\$3,319.00
Powerwave 604/120 8/16/CD Tower	\$3,369.00
Powerwave 604/150 8/16/CD Tower	\$4,169.00
Powerwave 604/150 8/16/CD Tower	\$4,669.00

MONITORS

Sony	
Multiscan 15sx	\$429.98
Multiscan 15sf II	\$519.98
Multiscan 17sf II	\$858.98
Multiscan 17se II	\$1,099.00
Multiscan 20sf II	\$1,889.00
Multiscan 20se II	\$1,999.00

Radias	
20GS 20" Monochrome	\$849.98
Intellicolor 20e Display	\$2,099.00
PrecisionView 17"	\$1,079.00
PrecisionView 21"	\$2,299.00

NEC	
XE15 15" Color Mtr	\$558.98
XE17 17" Color Mtr	\$998.26
XECP 21" Color Mtr	\$1,039.00
XP 21" Color Mtr	\$2,169.43
XE 21" Color Mtr	\$1,769.25

VIDEO/GRAFICS BOARDS

ATI	
Exclaim GA 2MB PCI	\$348.98
Exclaim GA 4MB PCI	\$457.98
Exclaim GA 2MB Upgrade	\$236.98
Connectix	
QuickCam	\$97.98
Focus	
LapisColor 16 for LC	\$314.00
LapisColor 16 Nubus (7")	\$314.00

Radius	
PrecisionColor Pro 24KK	\$524.98
Spigot Power AV	\$849.98
Thunder24 GT	\$524.98
Thunder IV GX 1152	\$1,397.00
Precision Color 8/1600 PCI	\$455.98
Thunder 3D/1600 PCI	\$1,147.00
Thunder Color 30/1600 PCI	\$1,097.00
Thunder Color 30/1152 PCI	\$1,499.00
VideoVision Studio 2.0	\$2,949.00

Raster Ops	
PaintBoard Prism Video Card	\$298.98
PaintBoard Prism GT w/Painter 3.0	\$549.00
Targa 2000 PCI	\$4,799.00

ACCELERATORS

Daystar	
PowerCard 66MHz	\$599.98
Turbo 601 100MHz for Ii3	\$1,198.00
Turbo 601 100MHz for Ii3	\$1,198.00
Turbo 601 100MHz for Ii4, vx P600	\$1,198.00
Turbo 601 65MHz	\$499.00

DYC	
Equalizer for PowerMac 6100/7100/8100	\$69.98
Extreme Systems	
Impact 030 LCLP/Perfoma 400	\$189.98
Impact 030 Color Classic	\$189.98
Impact 030 w/o Cache for LC/Mac II/II/400	\$109.00
Impact 030 w/o Cache for Color Classic	\$109.00

Newer Technology	
Power Clip for 6100/7100	\$79.98

MEMORY	
30Pin SIMMs	
2MB 8ns Upgrade Kit (2-1MB SIMMs)	\$64.98
4MB 8ns Upgrade Kit (2-2MB SIMMs)	\$131.98
8MB 8ns Upgrade Kit (2-4MB SIMMs)	\$277.98
16MB 8ns Upgrade Kit (4-4MB SIMMs)	\$355.98

72Pin SIMMS	
4MB 60ns SIMM (1x32)	\$105.98
4MB 70ns SIMM (1x32)	\$104.98
8MB 60ns SIMM (2x32)	\$289.98
8MB 70ns SIMM (2x32)	\$219.98
16MB 60ns SIMM (4x32)	\$489.98

168pin DIMMs	
8MB 70ns DIMM (1x64)	\$269.98
16MB 70ns DIMM (2x64)	\$469.98
32MB 70ns DIMM (4x64)	\$1,049.00
64MB 70ns DIMM (8x64)	\$2,049.00

PowerBook 500 Series	
4MB Mem Module for 520/520c/540/540c	\$169.98
8MB Mem Module for 520/520c	\$294.98

4MB 72 pin 70ns	
(1X32) SIMM	
Only \$113.98	
#06729	

VRAM	
1MB VRAM DIMM for 7200/7500/8500	\$52.98

NETWORKING	
Asante	
91809 10T FriendlyNet Adapter	\$39.98

10T HUB/8 w/ 10T/1N Ports \$169.98
 MacCon-I LC 10T \$94.98
 MacCon-I LC TN \$104.98
 MC-301E 16 ISI & SE/30 (TK/10T) \$145.98
 Micro EV/SC for PowerBooks 10T \$207.00
 NetExtender Hub (AUU/10T) \$119.98
 NetExtender Hub FN (AUU/10T) \$129.98
 Thin FriendlyNet Adapter \$54.98

Foxline

EtherWave AUI Transceiver \$94.98
 EtherWave AUI Transceiver \$96.98
 EtherWave LC Card \$168.98
 EtherWave Multi Printer Adapter \$335.98
 EtherWave NuBus Card \$169.98

Global Village

PowerPort Gold \$186.98
 PowerPort Mercury for PowerBook 500x \$186.98
 PowerPort Platinum for PowerBook 1XX \$324.98
 PowerPort Platinum V34 PC Card \$315.98
 PowerPort Professional V34/10-T PC Card \$474.98
 PowerPort Gold II \$103.98
 Teleport Platinum V34 for Desktop Macs \$194.00

Motorola

Power V 34 Data/Fax Modems \$253.98

MacClass MC288T-EZ PCMCIA \$328.98
 MacClass MC288MT II v34 \$179.35

Supra

PowerPort Software Server \$69.98
 FAXNetwork Software Server \$169.98
 FAXNetwork Software 10 User \$169.98
 Supra Express 144 Plus \$95.98
 Supra FaxModem 144PS Int - PowerBook \$215.98
 Supra FaxModem 288 134 Int for PB \$239.00
 Supra FaxModem 288 134 Int for PB \$169.00
 Supra Express 288 V34 FaxModem \$173.98

US Robotics

Mac & Fax Sportster 14.4 \$111.98
 Mac & Fax Sportster 28.8 V3.4 \$169.98

STORAGE DEVICES

Apple Hard Drives

2150MB Ext HD \$939.98
 1080MB Ext HD \$489.98
 540MB Ext HD \$369.98

Fujitsu

DynaMO 230MB Optical Drive \$478.98

Agfa

Arcus II \$1,979.00
 StudioScan \$599.98
 StudioScan IIS \$889.00

Epson

ES-1000C \$737.00
 ES-1200C \$949.98

Hewlett Packard

ScanJet 4C \$949.98

Nikon

Coolscan \$1,289.00

Super CoolScan LS-1000 \$1,953.00

Scantech Flattened Scanner \$1,117.00

Polaroid

PrintScan 35mm FilmScanner \$1,499.98

Umax

Vista S6 Pro 2 \$649.00
 Vista S8 Pro 2 \$773.98

Powerlook Pro 2 w/TMA \$1,890.00

Gemini D-16 Scanner LE \$1,475.00

Gemini D-16 Scanner Pro \$1,575.00

Visioneer

PaperPort Vx for Macintosh \$349.98

Adesso

Tru-form Extended Keyboard w/Pointer \$99.98

Alps

GlidePoint for Mac \$56.98

Colcomp

Drawing State II 12x12 w/Pressure Pen \$224.00

Drawing State II 6x9 w/Fractal Painter 3.0 \$419.98

Drawing State II 6x9 w/Pressure Pen \$194.98

Kensington

Thinking Mouse 4B \$84.98

TurboMouse 4.0 Trackball w/4.1 Software \$99.98

Wacom

ArtPad II (ADB) w/Erasing UltraPen \$139.00

ArtPad II (ADB) w/Dabber Bundle \$149.98

Artz II 12x12 (Serial) w/Erasing UltraPen \$399.98

Artz II 6x9 (ADB) w/Erasing UltraPen \$297.98

98495 MicroLaser 1212RM Tablet w/Erasing UltraPen \$189.98

PRINTERS

Accessories

Macintosh DIN 8 Printer Cable \$6.48

Port Juggler \$84.00

Epson

Stylus Color II Ink Jet \$448.98

Stylus Color Pro Ink Jet \$789.00

Stylus Pro XL Ink Jet \$1,778.00

HP Deskjet 340CM Portable Printer \$339.98

88609 HP Deskjet 600 InkJet \$298.98

88902 HP DeskWriter 600 \$298.98

94057 HP DeskWriter 600 InkJet \$389.98

23786 HP LaserJet 5MP \$1,044.00

Texes Instruments

MicroLaser Power Pro \$1,593.00

MicroLaser Pro 600 PS2 \$1,196.98

MicroLaser Pro E \$1,369.00

Tektronix

Phaser 140 \$1,195.00

Phaser 200 Supply Kit \$179.98

POWER BACKUP

APC Personal Surge Arrest \$18.98

APC Personal Surge Arrest w/Phone \$27.98

Backups 280 \$99.98

93934 Backups 400 \$149.98

11651 Backups 600 \$259.98

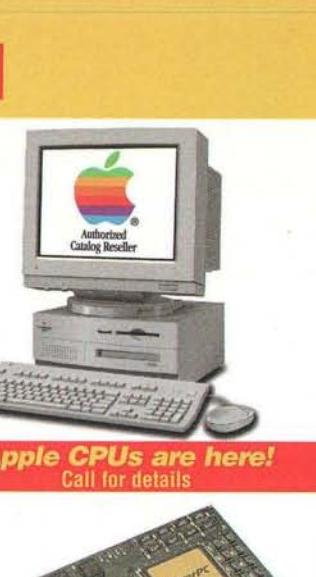
MOBILE COMPUTING

Targus

Leather Notebook Case \$89.00

Notepad (4 color choices) \$29.98

Universal Notebook Case \$59.98



Apple CPUs are here!

Call for details



Only \$205

Supra FAXModem V.34 288 External Mac

• 28,800 bps data – twice the speed of current V.32bis standard modems

• 14,400 bps fax capability

• State-of-the-art V.42bis 4:1 data compression for up to 115,200 bps throughput

• Silent Answer lets you receive both fax and voice calls on the same phone line

• For more information,



**DIRECTWARE IS YOUR AWARD WINNING SOURCE
FOR ALL MACINTOSH PRODUCTS!**

DIRECTWARE™
HARDWARE & SOFTWARE SHIPPED ANYWHERE

Open 6am to 8pm (PT) M-Sat
Customer Service hours: 7am to 6pm M-F (PT)

1•800•490•WARE

INTERNATIONAL ORDERS 310.793.4444 • CUSTOMER SERVICE 310.793.4580

24-HR FAX ORDER LINE 310.793.7175 • FAX ON REQUEST 310.793.8606

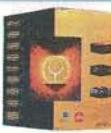
SEND MAIL ORDERS TO: DirectWare Order Dept.,

19950 Mariner, Bldg B, Torrance, CA 90503

INTERNET CATALOG: <http://www.directware.com>

BEST SELLERS

BUNGIE
MARATHON 2 "DURANDAL"
Network play with 3D texture map graphics
#173709 \$42.99



UMAX
PAGE OFFICE
Personal Scanner and Automatic Input Device
#173803 \$299.99



IOMEGA
JAZ 1GB PORTABLE
12ms access time and includes cartridge
#172902 \$579.99



INTUIT
QUICKEN 6 DELUXE CD
Organize your finances for '96
#174045 \$59.99



INTUIT
MacInTax 1040 DELUXE CD 1995 FINAL
1995 taxes made simple and easy
#181256 \$44.99



1040 Deluxe 3.5" Disks.....\$39.99 #181248

HEWLETT PACKARD
LASERJET 5MP
Postscript Level 2 600dpi laser printer
#139902 \$995.99



HEWLETT PACKARD
DESKJET 850C
600dpi color inkjet with one year warranty
#167115 \$498.99



EPSON
STYLUS II
720dpi color inkjet
#172145 \$399.99



TEXAS INSTRUMENTS
MICRO LASER 600
600dpi laser printer with Postscript Level 2
#113699 \$849.99



COSTAR
LABEL WRITER XL
The best label printer! Perfect for home or office use.
#106435 \$149.99



NEC
MULTI SYNC XV17 PLUS
17" Color Monitor
#186863 \$799.99



VIEWSONIC
15GA PERFECT SOUND
15" Color Monitor
#144932 \$524.99
17GA PerfectSound....#144933 \$795.99



PORTAIT DISPLAY
PIVOT 1700
.28mm 17" color monitor
#169768 \$969.99
Pivot 1700 17" .26mm #175577 \$1029.99



SONY
MULTI SCAN 17SF2
17" Trinitron
#182892 \$879.99
17SE2 17" Trinitron....#183004 \$1095.99



SONY
MULTI SCAN 15SF2
15" Trinitron (13.9 viewable)
#182341 \$509.99



METATOOLS
KAI'S POWER TOOLS 3
Hottest Photoshop Plug-ins
#176381 \$119.99



ALIENSKIN
BLACK BOX 2.0
Produce Pro Images in Photoshop faster
#183189 \$97.99



FRACTAL
PAINTER 4 UPGRADE
The best painting program for the Mac
(3.5" Disks) #182818 \$125.99



PASSPORT
ALCHEMY
Powerful stereo sound editing and modeling
#168696 \$234.99



VIRTUS
WALKTHROUGH PRO 2.5
Now create VRML for Internet
#900097 \$281.99



WEB SITE OF THE MONTH
• DAILY SPECIALS • CONTESTS
• ONLINE CATALOG
• SOFTWARE DOWNLOADS
• WEB SITE LINKS • VISIT TODAY!
<http://www.directware.com>



SPECIALS

UMAX
POWERLOOK II
Full 36-bit color scanner with transparency adapter. Includes Full Photoshop 3.0, WordLink OCR and more!
#900372 \$2995.99



GLOBAL VILLAGE
TELEPORT PLATINUM 28.8 V.34
Fax/Modem #106685 \$198.99



CALL FOR GIANT FREE CATALOG!

Fax-on-Request Service
Get detailed information on products from APC, Adesso, UMAX, Microtek, Newer, Claris and more! Simply follow directions, and get the facts by fax!



24-Hr. Fax-on-Request Service 310.793.8606

*TERMS: For your protection we ship only to your verified billing address. Non-defective returns subject to a restocking fee. No returns accepted without an RMA# (call customer service). Most software and memory chips are not returnable, unless covered by a manufacturer return policy. Next day service available most areas. Certain product cannot be shipped outside of U.S. While we do our best to check for errors, occasionally mistakes can occur. Prices and availability are subject to change. Call for current pricing. For faster service, our system recognizes existing customers by phone number to instantly locate prior order records and information. All trademarks used to benefit and without intent to infringe on mark holders. Call for business leasing. Copyright © 1996 DirectWare.

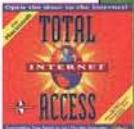
ENTER TODAY!! You could WIN a Radius 81/110 Power PC!!!

HURRY! Entries must be received by March 24, 1996!



BOCA WARE-EVER V34
28.8kbps data modem with 14.4kbps send/receive.
FREE AOL Internet Kit! 10 Free hours.
\$137.99
#900062

FREE INTERNET TOTAL ACCESS™ WITH ANY ORDER
Includes: Netscape Navigator and Eudora E-Mail, plus Earthlink Network Registration Kit!

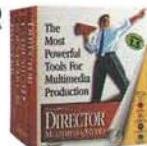


Business Leasing Available!

HOT NEW PRODUCTS!

MACROMEDIA

DIRECTOR MULTI-MEDIA STUDIO 1.5



Includes Director, FractalDesign Painter, SoundEdit 16 and Extreme 3D #184222
\$1379.99

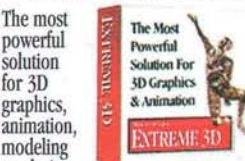
DIRECTOR 4.0\$819.99 #106828

PINNACLE MICRO APEX 4.6 GB OPTICAL DRIVE

Faster than the average hard drive. 4.6 GB capacity per removable disk.
\$1594.99
#900281
4.6 Optical cartridge.....#171243 \$194.99

MACROMEDIA

EXTREME 3D



The most powerful solution for 3D graphics, animation, modeling, rendering and compositing.

\$479.99
#184223

SYQUEST

SYJET 1.3GB



The perfect solution for multimedia. Includes FREE application and utility software
\$589.99
#900406
SYJET 1.3 GB cartridge \$99.99 #900408

CLARIS

FILEMAKER PRO 3.0 UPGRADE

The Worlds Best Database Software is NOW Completely Relational



\$94.99
#900143

EPSON

ES 1000C Color Scanner



30Bit Color
\$749.99
#147552
ES-1200C Color Scanner \$1159.99 #139556

HEWLETT PACKARD ScanJet 4C

High Performance Color Scanner
\$969.99
#175368

ADODE

PHOTOSHOP 3.0



Photo design and production tool
#116124

ADODE ILLUSTRATOR 6.0



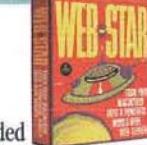
The leading illustration and design tool
#900066

SMART & FRIENDLY CD-R1002 INT Pro Recorder

Complete CD Recordable Kit
\$898.99
#900397
CD-R1002 Ext Recorder \$1098.99 #900398
CD-R Media 74 min\$6.99 #900401

STARLINE WEB STAR

Apple Recommended Web Server Software



\$449.99
#900375

VENTANA HOT METAL PRO 2.0

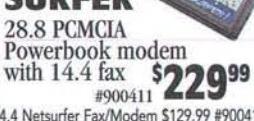
Most Popular HTML Tool
\$167.99
#900060

ADODE PAGE MILL



Easiest way to create web pages
#900059

NEW MEDIA NET SURFER



28.8 PCMCIA Powerbook modem with 14.4 fax
\$229.99
#900411
14.4 NetSurfer Fax/Modem \$129.99 #900412

SUPRA 28.8 V.34 Modem

SupraExpress 28.8
\$153.99
New Lower Price
#169340

SCSI STORAGE PRODUCTS

Seagate



ST32430N

2GB SCSI 3.5"
#133039

BEST BUY!



Upgrade your compatibility today!

Model: ST15230N

Capacity: 4GB SCSI

Part #: 138676

Price: \$959.99

Model: ST3250N

Capacity: 2GB SCSI

Part #: 132795

Price: \$739.99

Model: ST15150N

Capacity: 4GB SCSI

Part #: 131679

Price: \$1,199.99

Model: ST15150W

Capacity: 4GB SCSI-W

Part #: 106222

Price: \$1,259.99

All drives shown are "raw" mechanisms w/o case or software.

Anubis formatting software \$8.99 #900367

Quantum



OTM1080S

1.08GB SCSI 3.5"
#161449



\$254.99

MODEL	CAPACITY	PART #	PRICE
OTM850S	850MB SCSI 3.5"	#161447	\$194.99
Atlas	2.1GB SCSI 3.5"	#110834	\$699.99
Atlas	4.3GB SCSI 3.5"	#179729	\$899.99

CyberRam

Call Today for Exceptional Pricing on Memory with Lifetime Warranty!

GET a FREE Catalog Subscription and You Could Win a Radius PowerPC!!

Name _____

Address _____

City _____ State _____ Zip _____

COUPON SPECIALS

Momentum PORT JUGGLER 3.0

\$89.99
#900210

No Credit Card Surcharges

Hitachi STUDIO PAD GRAPHICS TABLET

\$159.99
#900154

Discount Code MW963

CIRQUE GLIDEPOINT DESKTOP CONTROL AT YOUR FINGERTIPS

\$59.99
#900137

FedEx

2nd Day Air at Ground Rates

DIRECTWARE
HARDWARE & SOFTWARE SHIPPED ANYWHERE

1-800-490-WARE

Internet: <http://www.directware.com>

I use a: Mac PC Both Have office at home Have CD-ROM
 Run business from home Have Powerbook Use internet
 Use another online service Use Mac for Multimedia/Publishing

Mail contest entries only to:

DirectWare, Box 11191, Dept MW962, Torrance, CA 90510

Limit one entry per person, group or household. Must be 18 or older. Void where prohibited by law. Open to U.S. residents not employed by DirectWare, NovaQuest or their business partners' employees. Random drawing to be held March 30, 1996. Winner will allow use of likeness and name in catalog for promotional purposes, without further compensation. One Grand Prize winner of Complete Radius System. You may also enter the contest from our Internet Web Page. Odds of winning will depend on the total number of entries received. All entries become the property of DirectWare. To claim prize, winner must provide a valid "Finger Name" to the P.O. box address noted above. At DirectWare, we do not accept responsibility for lost or damaged entries due to the responsibility of the carrier. Entries must be received by March 24, 1996 to be eligible.

Please circle 88 on the Reader Response Card!



- For a full listing of our products, check out our home page at: <http://www.megahaus.com>
- Selling quality drives at incredibly low prices Since 1987.
- 30 Day return policy.
- Fast service. Most orders shipped same day!
- Lifetime technical support.
- Friendly, helpful staff. We appreciate your business!

CD ROM RECORDER PRICE BREAKTHROUGH

\$899 with 1 free disk

\$999 with 20 free disks

- Complete external package includes everything you need!
- High quality drive, with Incat Easy-CD Pro software.
- Double speed recorder & reader.

CDR-74 disks	Qty 10	\$7.69ea	Qty 25	\$6.79ea	
Qty 50	\$6.59ea	Qty 100	\$6.29ea	Qty 500	\$5.99ea
Qty 1000	\$5.59ea				

OPTICAL DRIVES

230MB FUJITSU

- Read and write 128 or 230MB disks
- \$479** 1 free disk. Extra disks only \$19.

1.3 Gig NEC

- Read and write 650MB or 1.3Gig disks
- 2 Year warranty! 1MB data buffer.

\$1159 1 free disk. Extra disks only \$59.

4.6 Gig PINNACLE MICRO

- Read and write 2.3Gig or 4.6Gig disks
- 512K data Buffer. 1 year warranty.

\$1499 1 free disk. Extra disks only \$189.

CD ROM DRIVES

4X	Sanyo	190ms	\$147
4.4X	Pioneer	140ms	\$185
6X	NEC	150ms	\$315
6.7X	Toshiba	120ms	\$345

FUJITSU 2 Gig Wide SCSI

M2915W With Controller

Internal \$619 **\$749**

External \$749 **\$919**

TAPE BACKUP SALE

2Gig	Conner	Minicartridge	\$478
2Gig	HP	DAT	\$799
2-4Gig	HP	DAT-DC	\$899
4-8Gig	HP	DAT-DDS2	\$1079

Includes 1 tape & NovaMac backup software.

1-800-786-1184

HARD DRIVE SPECIALS

		Internal	External
1 Gig	5400rpm	\$240	\$299
1.6Gig	4500rpm	\$279	\$339
2Gig	7200rpm	\$629	\$689
4Gig	7200rpm	\$899	\$959
9Gig	5400rpm	\$1799	\$1899

Quantum™

#1 HARD DRIVE FOR MAC!



Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
850MB	14ms	4500	128K	3yr	TB8505	\$190	\$250
1080MB	12ms	5400	128K	3yr	FB10805	\$250	\$310
2150MB	8ms	7200	1024K	5yr	XP32150	\$720	\$780
2216MB	8.5ms	5400	512K	5yr	VP32210	\$625	\$685
4300MB	8.6ms	7200	512K	5yr	XP34301	\$985	\$1045

MegaHaus is your #1 source for Quantum drives.

- Low price guarantee on all Quantum drives!
- Same day shipping on most orders!



SyQuest® TECHNOLOGY

Genuine SyQuest cartridges
Qty 4-9 / 10+ or with drive.
44MB \$42 \$40
88MB \$47 \$45
105MB \$53 \$50
200MB \$76 \$71
270MB \$59 \$56

Capacity	Speed	Compatible	Model	Buffer	Internal	External
88MB	20ms	44, 88MB	SQ5110C	32K	\$298	\$358
135MB	13.5ms	135MB	EZ1355	128K	n/a	\$229
200MB	18ms	44,88,200MB	SQ5200C	64K	\$379	\$439
270MB	13.5ms	105, 270MB	SQ3270S	128K	\$369	\$429

MegaHaus is your #1 source for SyQuest drives.

- Low price guarantee on all SyQuest drives!
- 1 FREE cartridge with each drive!
- 2 year warranty on drive and case!
- 5 year warranty on all cartridges!
- Same day shipping on most orders!

OUR PRICE INCLUDES 1 DISK!

Brand	Capacity	Seek	RPM	Buffer	Wty	Model	Internal	External
Seagate	1050MB	9ms	5411	512K	5yr	ST31231N	\$349	\$409
Seagate	1080MB	12.5ms	5400	128K	3yr	ST51080N	\$285	\$345
Conner	1080MB	9ms	5400	256K	5yr	CFP1080S	\$249	\$309
NEC	1083MB	11ms	4090	256K	3yr	NEC3827	\$215	\$275
NEC	1620MB	11ms	4500	256K	3yr	NEC3847	\$279	\$339
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221	\$639	\$699
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221AV	\$699	\$759
Conner	2147MB	9ms	5400	512K	5yr	CFP2105S	\$599	\$659
Seagate	2147MB	9ms	5411	512K	5yr	ST32430N	\$619	\$679
Seagate	2147MB	8ms	7200	512K	5yr	ST32550N	\$679	\$739
Seagate	4290MB	9ms	5400	512K	5yr	ST15230N	\$925	\$985
Seagate	4290MB	8ms	7200	1024K	5yr	ST15150N	\$1159	\$1219
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243	\$960	\$1020
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243AV	\$1039	\$1099
Conner	4294MB	9.5ms	7200	512K	5yr	CFP4207S	\$939	\$999
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991	\$1879	\$1979
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991AV	\$1999	\$2099
Seagate	9090MB	11ms	5400	1024K	5yr	ST410800N	\$2019	\$2119

WIDE SCSI (WIDE SCSI controllers Adaptec PCI \$299, Atto Nubus \$839 with WIDE SCSI drive purchase.)

Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221W	\$729	\$829
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221WAV	\$789	\$889
Seagate	2147MB	8ms	7200	512K	5yr	ST32550W	\$849	\$949
Fujitsu	2176MB	9.5ms	7200	512K	5yr	M2915W	\$579	\$639
Seagate	4290MB	8ms	7200	1024K	5yr	ST15150W	\$1219	\$1319
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243W	\$1059	\$1159
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243WAV	\$1135	\$1235
Fujitsu	4350MB	8.9ms	7200	512K	5yr	M2934W	\$949	\$1049
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991W	\$1999	\$2199
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991WAV	\$2099	\$2299

M-F 8-8 Sat 9-3 Central

April 1996 MacWorld

Local (713) 534-3919

Fax (713) 534-6580

TTY (Deaf Line) 1-800-473-0972

No International orders accepted.

2201 Pine Drive

Dickinson, Texas 77539

Internet <http://www.megahaus.com>

Prices and specifications subject to change. Some exceptions may apply to low price guarantee. All trademarks are registered trademarks of their respective companies. Returns must be in new condition, and may be subject to restocking fee. Shipping is not refundable. Personal checks held for clearance. © Megahaus 1995

MEGAHAUS
The Drive Authority



WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

MEMORY

SECURITY WILL CALL WINDOW NOW OPEN!
NO SURCHARGE FOR MC, VISA AE & DISCOVER

L.A. Trade has served the PC
market for 10 years...

MACINTOSH MEMORY UPGRADES

Now we bring our expertise
to the Apple Macintosh user.

YOUR MACHINE	STANDARD	MAX	VIDEO UPGRADE	VIDEO COST	256K/512K CACHE	2MB	4MB	6MB	8MB	10MB	12MB	16MB	32MB	64MB
Apple PowerBook 190, 190CS, 5300	4	32				169			317		527	579	1299	
Apple PowerBook 520, 520c, 540, 540c Notebook	4	36				169			319		619	1199		
Apple PowerBook DUO 210, 230, 250 Notebook	4	24				179			339		499			
Apple PowerBook DUO 270c Notebook	4	32				179			339		499		20 mg=789	
Apple PowerBook DUO 280, 280c Notebook	4	40				179			339		499			
Apple PowerBook DUO 2300c/100 Notebook	4	40				Call			Call		Call			
Apple Macintosh TV	5	8				109								
Apple Macintosh IIfx	4	128				165						729		
Apple Macintosh IIsi	2/3/5	17				140			336			516		
Apple Macintosh IIvx & Ivi	4	68	512k	59		140			336			516		1980
Apple Macintosh Classic						153								
Apple Macintosh Color Classic	4	10	256k	34		70	130		258					
Apple Macintosh Classic II, LC, LCII	2/4	10	512k	59		70	130		258					
Apple Macintosh LCIII, LC475, LC550, LC575	4	36	256k	34		109						419	899	
Apple Macintosh LC520	5	36				109						419	899	
Apple Macintosh LC580	5	36				109						Call	899	
Apple Macintosh LC630	4	36				109						419	899	
Apple Macintosh LC5200	5	36				109						Call	899	
Apple Macintosh IIcx	1	128				130						516		2076
Apple Macintosh II, IIx	1	32				130						516		
Apple Macintosh Plus, SE	1	4				70	130							
Apple Macintosh SE30	1/2	32				70	130		258			516	1112	
Apple Performa 200	2	10				70	130		258					
Apple Performa 400	4	10				70	130		258					
Apple Performa 405, 410, 430	4	10				70	130		258					
Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68		109			219			419	899	
Apple Performa 550, 575, 577	5	36				109			219			419	899	
Apple Performa 600, 600CD	4	68	512k	59		130			279			529		1980
Apple Performa 6110CD, 6112CD, 6115CD (pairs)	8/16	72				109			219			419	899	
Apple Performa 6117CD, 6118CD (pairs)	8/16	72				109			219			419	899	
Apple Performa 630	4	36				109			219			419	899	
Apple Centris 610	4	68	512k	59		109			219			419	899	
Apple Centris 650	4	132	512k	59		109			219			419	899	
Apple Centris 660AV	4	68				109			219			419	899	
Apple Quadra 605	4	36	512k	59		109			219			419	899	
Apple Quadra 610	4	68				109			219			419	899	
Apple Quadra 630	4	36				109			219			419	899	
Apple Quadra 650	4/8	132/136				109			219			419	899	
Apple Quadra 660AV	4	68				109			219			419	899	
Apple Quadra 700	4	68	512k	59		140						516		1980
Apple Quadra 800 (pairs)	8	136	512k	59		109			219			419	899	
Apple Quadra 840AV	8	128	512k	59		109			219			419	899	
Apple Quadra 900	4	256	512k	59		140						516		1980
Apple Quadra 950	8	256	512k	59		140						516		1980
Apple Workgroup Server 60 (pairs)	4	68				109			219			419	899	
Apple Workgroup Server 80 (pairs)	8	136				109			219			419	899	
Apple Workgroup Server 95	16/32/48	256				140						516	1112	
Apple Workgroup Server 6150 (pairs)	8	72				109			219			419	899	
Apple Workgroup Server 8150 (pairs)	16	264				109			219			419	899	
Apple Workgroup Server 9150 (pairs)	16/24	264				109			219			419	899	
Apple Power Macintosh 6100/60 (pairs)	8	72	512k	59		109			219			419	899	
Apple Power Macintosh 7100/66 (pairs)	8	136	512k	59		109			219			419	899	
Apple Power Macintosh 7200 Catalyst (168 pin)	8	136	1mg	99	179				269			469	949	1920
Apple Power Macintosh 7500/100 TNT (168 pin)	8	136	1mg	99	179				269			469	949	1920
Apple Power Macintosh 8100/80 (pairs)	8	264	512k	59		109			219			419	899	
Apple Power Macintosh 6100/66 & 6100/66AV (pairs)	8/16	72				109			219			419	899	
Apple Power Macintosh 7100/66AV (pairs)	16	136				109			219			419	899	
Apple Power Macintosh 7100/80, 7100/80AV (pairs)	8/16	136				109			219			419	899	
Apple Power Macintosh 8100/100, 8100/100AV (pairs)	8/16	264				109			219			419	899	
Apple Power Macintosh 8100/110 (pairs)	8/16	264	512k	59		109			219			224		
Apple Power Macintosh 8500/120 (Nitro)	8/16	264				179			269			469	949	1920
Apple Power Macintosh 9500/120, 9500/132 (Tsunami)	8/16	264				179			269			469	949	1920
Apple Power Macintosh 9500	8/16	264	1mg	99	179				224			469	949	1920
Apple LaserWriter LS	512K	1				512k=72								
Apple LaserWriter NTR	3	4				79								
Apple LaserWriter NT	2	8							278					
Apple LaserWriter II NTX	2	12							330					
Apple LaserWriter II NTX-J	4	12							330					
Apple LaserWriter IIf	2	32										516		
Apple LaserWriter Ig	5/8	32							136			516	1236	
Apple LaserWriter Select 300	512K	4.5							1mg=34	109				
Apple LaserWriter Select 310	1.5	5.5							1mg=44	109				
Apple LaserWriter Select 360	7	16										419		
Apple LaserWriter Pro 600	4	32							109			419	899	
Apple LaserWriter Pro 630	4/8	32							109			419	899	
Apple LaserWriter Pro 810	8	32							109			419	899	
Apple LaserWriter 16/600PS	8	32							109			529	899	

SIMM MODULES

72 PIN MODULES	30 PIN MODULES
1x32-70 (4MB)	\$109
1x32-60 (4MB)	\$114
2x32-70 (8MB)	\$219
2x32-60 (8MB)	\$229
4x32-70 (16MB)	\$419
4x32-60 (16MB)	\$429
8x32-70 (32MB)	\$899
8x32-60 (32MB)	\$909

DIMMS, 168 Pin

1x64	8Meg	\$ 224
2x64	16Meg	469
4x64	32Meg	949
8x64	64Meg	1920
16x64	128Meg	Call

CUSTOMER SERVICE & TECHNICAL: OPEN M-F, 9-4 PST

All products brand new & guaranteed • We buy excess inventory
Trademarks are registered with their respective companies.



22825 Lockness Avenue • Torrance, CA 90501

CALL FOR NEW MODELS NOT LISTED

NO SURCHARGE FOR MASTERCARD, AMEX, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000, GOVERNMENT & INSTITUTIONS. California orders add a 2.5% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee. We accept International orders shipped via UPS Air, APO, FPO orders welcome. Customers are expected to pay customs and "other" charges if shipped int'l. All credit card charges verified for fraudulent use. SORRY, NO REFUNDS AFTER 30 DAYS - EXCHANGES ONLY. If you receive defective merchandise we exchange only - no refunds. We accept MC, VISA, Discover, AE, pre-paid orders, purchase orders, wire transfers, COD (carriers check) orders, cash & cashier's checks. Orders shipped by UPS, FEDEX must be signed for.

- ALL MANUFACTURER PART #'S ARE FOR REFERENCE ONLY
- MINIMUM ORDER \$40.00 • NO REFUNDS ON SHIPPING

310-539-0019
FAX: 310-539-5844

SECURITY WILL
CALL
TOLL FREE
NOW OPEN

1-800-433-3726
(US and Canada)

ESTAB.
1985
Prices & Availability
Subject to Change
Without Notice

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
Sat. 10:00 a.m. to 12:00 noon

PRICES MAY FLUCTUATE. CALL FOR LATEST PRICING!!

small colleges can help you make it **big.**

Just ask: Michael D. Eisner—Chairman/CEO, The Walt Disney Company, Denison University, Ohio; William C. Springer—President, Heinz North America, Gannon University, Pennsylvania; Donna Wolf Steigerwaldt—Chairman of the Board/CEO, Jockey International, Inc., Colorado College, Colorado; James W. Near—Chairman/CEO, Wendy's International, Hanover College, Indiana; John W. Johnstone, Jr.—Chairman, President & CEO, Olin Corporation, Hartwick College, New York; William V. Roberti—President/CEO, Brooks Brothers, Sacred Heart University, Connecticut.

Some of our country's most successful people went to small colleges where size, faculty, and curriculum combined to give them the education, skills, and confidence to make it big in today's world.

A small college can help you make it big, too. To learn more about small independent colleges, contact: Council of Independent Colleges, One Dupont Circle, Suite 320G, Washington, D.C. 20036.

Sponsored by **CIC** The Council of Independent Colleges



Computer Training Videos only \$49 each

	# volumes		# volumes
ACT!	3	Now Contact	1
Access	6	Now Up-to-Date	1
Canvas	5	Now Utilities	1
ClarisWorks	7	Online Services	1
CorelDRAW	6	PageMaker	7
Desktop to Pre-Press	2	Painter	4
Design & layout	1	Persuasion	2
Digital Chisel	1	Peachtree Accounting	4
Director	5	Photoshop	10
Excel	5	PowerPoint	2
FileMaker Pro	4	Premiere	3
FreeHand	6	QuarkXPress	4
4th Dimension	6	Quicken (Personal)	2
HyperCard	4	Quicken (Business)	2
Illustrator	5	QuickTime	1
Infini-D	2	SuperPaint	3
Integrating Programs	1	Using America Online	1
Lotus 1-2-3	4	Using CompuServe	1
Mac P & L	3	Using Fonts	1
MacProject Pro	1	Using PowerBooks	2
Mac Troubleshooting	3	Utilities, CDEV's, Inits	1
MacWrite Pro	3	Windows Basics	4
Mastering Macintosh	4	Word	6
Mastering the Internet	1	WordPerfect	6
Microsoft Project	4		
Microsoft Works	5		
MiniCad	2		
Multimedia	1		
Nisus Writer	4		
Networks	1		
Norton Utilities	1		

All videos carry a 30 day money back guarantee. All videos may be upgraded when a new version is released for \$19.95 per video. Videos may be ordered individually or as a group. Video training is also available in Spanish, Japanese, German, and French for selected titles. Windows versions for most programs are also available. Please add \$4 per order plus \$1 per video shipping and handling. It's time to get serious.

**Call 800-527-1914
904-677-1918 Fax 904-677-6717**

Dept MW-0496 100 E Granada Blvd Ormond Beach FL 32176-1712
<http://www.macacademy.com>

Circle 107 on reader service card

Call Mac Preferred Today for the best in price, selection and service!!

PowerPC 9500/132

Complete System



ONLY \$159!
per month!

- 32MB RAM
- 2.0GB hard drive
- CD ROM
- XKeyboard/Mouse
- 2MB VRAM
- 20" color monitor

Call for custom configurations!

Radius 81/110

ONLY \$34! per month!

- 100% Mac compatible
- 110MHz!

Only \$1484
with rebate!

ONLY \$599!

Combo Sale! Stackable Modular Drives



1GB Quantum &
SyQuest 270

All Ext. drives include SCSI cable, terminator and software

SyQuest EZ135

ONLY \$229!



The new standard!

Olympus 1.3GB Optical Drive

ONLY \$1489!

1.3GB starting at \$1249!

Space Saver!

ONLY \$1599!

Get all your drives together in one case!

Includes SyQuest 200, Quantum 540MB and Sony 650 optical drive!



Pioneer 4X

CD Changer • 6 CD's at once

• QUAD speed!

ONLY \$395!



Apple Multiple Scan 15

ONLY \$399!



- 15" Hi-Res screen
- 1024 x 768 dpi
- Exceptional color

Complete Systems

Buy! Lease!

9500/132 /32/2.0GB/CD	\$7099	\$159
w/20" monitor, XKeyboard, Mse		
9500/120 /16/1.0GB/CD	\$4799	\$108
w/17" monitor, XKeyboard, Mse		
8500/120 16/1.0GB/CD	\$5799	\$130
w/20" monitor, XKeyboard, Mse		
7500/100 16/500/CD	\$3599	\$81
w/20" monitor, XKeyboard, Mse		
Radius 81/110 /16/2.0GB/CD	\$4299	\$97
w/20" monitor, XKeyboard, Mse		

Macintosh CPU's

Buy! Lease!

9500/132 /16/2GB/CD	\$3695	\$83
9500/120 /16/1GB/CD	\$3165	\$71
8500/120 /16/1GB/CD	\$3695	\$83
7500/100 /16/1GB/CD	\$2684	\$60
7200/90 8/500/CD	\$1494	\$34
7200/75 8/500/CD	\$1365	\$31
Radius 81/110 8/730/CD	\$1484	\$34

Ext. Hard Drives

External Turbo!

Quantum 730MB Lightning	\$245	\$270
Quantum 1.0GB Fireball	\$325	\$350
Quantum 2.2GB Capella	\$725	\$750
Quantum 4.3GB Grand Prix	\$1055	\$1080
Quantum 4.3GB Atlas	\$1285	\$1310
Seagate 2.4GB Hawk 2	\$735	\$785
Seagate 2.5GB Barracuda 2	\$945	\$995
Seagate 4.3GB Hawk 4	\$1055	\$1105
Seagate 4.3GB Barracuda 4	\$1475	\$1525
Seagate 9.1GB Elite-9	\$2395	\$2445

Ext. Removable Drives

External Turbo!

SyQuest 88	\$174	\$199
SyQuest 105	\$145	\$170
SyQuest 200	\$365	\$390
SyQuest 270	\$370	\$395
SyQuest EZ 135	\$229	\$254

Ext. Optical Drives

External Turbo!

Fujitsu Dynamo 230	\$495	\$520
Olympus 230	\$455	\$480
Olympus DELTIS 1.3GB	\$1489	\$1539
Sony 650	\$799	\$824
Sony 1.3GB (Half-Height)	\$1249	\$1299
Pinnacle Micro Apex 4.6GB	\$1495	\$1545

Ext. Tape Drives

External Turbo!

Sony SDT-5000	\$995	\$1095
Exabyte 8205 XL	\$1469	\$1569

Ext. CD ROM Drives

Pioneer 6 Disc 4x CD Changer	\$395
PinnacleMicro CDR-1000 Dual Speed	\$1419
Yamaha 4-Speed CD-ROM Recorder	\$2789

Monitors

Apple Multiple Scan 15	1024x768	\$399
Sony 15SF	1024x768	\$515
Sony 17SF	1024x768	\$915
Sony 20SE	1280x1024	\$1849
NEC 15XV	1024x768	\$439
NEC 17XV	1024x768	\$729
Princeton Ultra 17	1024x768	\$629
Radius PrecisionView 17	1024x768	\$889
Radius PrintView 21SR	1600x1200	\$3099
Radius IntelliColor 20E	1600x1200	\$1989
ViewSonic 20G	1600x1200	\$1479

ATI XClaim GA

SVGA 4MB PCI

ONLY \$449!



- 24-bit color acceleration
- 1600x1200

Relisys 9624T

ONLY \$949!



- 600 dpi
- includes Transparency

Apple Color StyleWriter 2400

ONLY \$369!



- 720 x 360 dpi

Wacom ArtZ 6x8

ONLY \$289!



- Cordless stylus
- Pressure sensitive

SmartLink 28.8 V.34

ONLY \$135!



- 44MB starting at \$35!

SyQuest 200

ONLY \$70!



- OEM 128MB

Sony 1.3GB DAT 90m

ONLY \$85!



- OEM 128MB

Photoshop

ONLY \$199!
with any purchase



- Retrospect

Free utility or game disk

with every purchase—no minimum required!

FAX 310-224-1962

E-mail: macprefer@aol.com

International Orders

310-224-1955

Prices, terms and availability subject to change without notice. Call for latest prices and specials. Promotions limited to stock on hand. Not responsible for typographical errors. Return items may be subject to restocking fee.

Video Cards

Radius Thunder 24 (1152x870)	\$549
Radius Thunder II Series IV GX 1152	\$1579
Radius Thunder II 130 (1152x870)	\$1799
Radius Thunder II 30/1152 (PCI)	\$789
Radius ThunderColor 30/1152 (PCI)	\$1559
Radius ThunderColor 30/1600 (PCI)	\$1989
Radius SpigotPower AV	\$589
XClaim GA SVGA 2MB PCI	\$345
XClaim GA SVGA 4MB PCI	\$449

Memory

4MB SIMMS	\$142
8MB SIMMS/DIMMS	\$285/\$289
16MB SIMMS/DIMMS	\$469/\$569
32MB SIMMS/DIMMS	\$945/\$949

Scanners

Dextra Desktop Color 2400	600 dpi	\$299
Epson ES-1200c Pro	1200 dpi	\$1169
Microtek ScanMaker II	300 dpi	\$369
Nikon CoolScan LS-10 35mm	2700 dpi	\$1269
Relisys 2412	300 dpi	\$789
Relisys 4830T w/Transparency	400 dpi	\$999
Relisys 6624T w/Transparency	600 dpi	\$949
Umax PowerLook Pro w/ trans	1200 dpi	\$1885
Visioneer PaperPort	400 dpi	\$349

Printers

Apple Color StyleWriter 2200	720 dpi	\$359
Apple Color StyleWriter 2400	720 dpi	\$375
Apple LaserWriter 4/600	600 dpi	\$765
HP LaserJet 5MP Laser	600 dpi	\$1039
HP DeskWriter 660C Inkjet	600 dpi	\$394
PrimaPro Color	300 dpi	\$1499
Prima Pictura 310 Color	300 dpi	\$3899
Ti MicroLaser PowerPro	600 dpi	\$1559

Graphics Tablets

Wacom ArtZ	6" x 8"	\$289
Wacom ArtZ	12" x 12"	\$419
Wacom ArtZ	12" x 18"	\$689

Modems

GlobalVillage TelePort Gold 14.4	\$99
GlobalVillage TelePort Platinum 28.8	\$195
SmartLink 28.8 V.34	\$135
SupraFAXModem 28.8 MC V.34	\$215

Keyboards/Pointers

Addesso TrueForm Keyboard	\$88
Mac Extended Keyboard	\$49
Connectix QuickCam	\$95

Media

270MB SyQuest cartridges	\$56
200MB SyQuest cartridges	\$70
EZ 135MB SyQuest cartridges	\$18
105MB SyQuest cartridges	\$33
44/88MB SyQuest cartridges	\$39/44
OEM 650/1.3GB optical cartridges	\$53/54
OEM 128MB optical cartridges	\$17
Sony 128/230MB optical cartridges	\$29/39
Sony 600/650MB optical cartridges	\$69
Sony 900/1.3GB optical cartridges	\$85
Sony 1.2/1.3GB optical cartridges	\$85
Sony 90m DAT tapes	\$12
Sony 120m DAT tapes	\$24

Software

Adobe Photoshop

Call 800-905-3034 Fax 818-708-6399



Call Today for Your
Free CATALOG

LOW RATES BUSINESS LEASING AVAILABLE



**Trans
Leasing**

Corporate Accounts:
Get a Line of Credit
up to **\$50,000.00**

NUMBER NINE Graphics Acceleration **NEW**

Image 128 \$1,329 V9248

1600x1200 Res., 8MB, PCI

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY

Optical Apex
4.6GB **\$1599**
As low as #E7236

**Free 230MB Cartridge W/
Tahoe 230** \$519 #E7251

RCD 5040 \$1189 #E7248

RCD 1000 w/ Toast Sftwr \$1449 #E7246

radius
Your HighEnd Solution

Radius PCI Cards
ThunderColor 30/1600 PCI \$1899 #V9102

ThunderColor 30/1152 PCI \$1499 #V9105

Thunder 30/1600 PCI \$1899 #V9108

Radius Monitors
Precision View 17 \$949 #M6606

Press View 17SR \$1909 #M6600

Press View 21SR \$3049 #M6609

PrecisionView 21 \$2159 #M6614

Multiview 21 \$1739 #M6611

EA Accelerated PCI Video Card **\$569**
EAycolor 1600/16 PCI Card #V45699

21" Monitor & Calibrator \$2369 #M6646
MPEG \$79 #V4533

**New Low MacMarket
Prices on Apple
Monitors & Printers**

Apple Multiple Scan 15" \$399 #M6558

Apple Multiple Scan 20" \$1859 #M6564

Apple Vision 1710AV \$1059 #M6567

Apple MultipleScan 14" \$339 #M6570

Apple MultipleScan 1705 \$759 #M6638

LaserWriter 16/600PS \$2150 #P3250

Color LaserWriter 12/600PS \$6500 #P3405

LaserWriter 4/600PS \$749 #P3256

Color StyleWriter 2400 \$369 #P3259

Color StyleWriter 2200 \$399 #P3282

StyleWriter 1200 \$199 #P3265

International Call: 818-708-6388

Customer Service and Technical
support Call: 818-708-6388

Address: 6924 CANBY AVE UNIT#104
RESEDA CA, 91335

Mon-Fri, 8AM to 6PM (Pacific)

All Prices reflect a Cash Discount. Any other method is 2% to 4% higher. Prices are subject to change without notice. All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#. No Refunds on Labor or Freight Charges.

We accept Visa, Mastercard, Discover & American Express. P.O.s are accepted from U.S. Gov't, Schools & Corporations. Not responsible for typographical errors.

MacMarket

1-800-905-3034

Fax: 818-708-6399

PowerBook 5300 Blowout Prices

5300cs100MHz8/500	\$2249	#A1130
5300cs100MHz16/750	\$2799	#A1133
5300c100MHz8/500	\$3169	#A1121
5300c100MHz16/750	\$3599	#A1118
5300ce117MHz32/1GB	\$5399	#A1115
Duo 2300c 100MHz8/750	\$3329	#A1106
Duo 2300c100MHz20/1GB/Modem	\$4279	#A1107
190 33MHz 4/500	\$1589	#A1112
190cs 33MHz 8/500	\$1939	#A1109

MacMarket Slashed Prices on PowerMac

PowerMac 7200 90MHz • 601 RISC • PCI

16MB•500MB•CD600i \$1743 #A1187
24MB•1GB•CD600i \$2249 #A1334

7200 / 75MHz Complete System
16MB • 500MB • CD • 14" Monitor •
Keyboard \$1999 #A1604
16MB • 1GB • CD • 15" Monitor •
Keyboard \$2299 #A1397



PowerMac 7500 100MHz • 601 RISC • PCI

16MB•1GB•CD600i \$2677 #A1329
48MB•2GB•CD600i \$3999 #A1411

7500 Complete System
24MB RAM • 1GB Hard Drive
• CD600i • 15" Monitor •
Extended Keyboard
\$3399 #A1611

PowerMac 8500 120MHz • 604 RISC • PCI

16MB•1GB•CD 600i \$3695 #A1314
48MB•2GB•CD 600i \$4655 #A1322
80MB•4GB•CD 600i \$5959 #A1332

8500 Complete System
48MB RAM • 2GB Hard Drive •
CD600i • 17" Monitor •
Extended Keyboard
\$5699 #A1328

PowerMac 9500 132MHz • 604 RISC • PCI

80MB • 2GB • CD 600i \$5619 #A1228
144MB • 4GB • CD 600i \$7898 #A1225

9500 / 132 MHz
80MB • FWB SledgeHammer 8GB-Wide
Array • CD 600i Radius • PressView21SR
• IMS TwinTurbo 128M • Extended
Keyboard
\$12,995 #A1233

Performas 6200 & 5215
6200CD•75MHz•PowerPC \$1798 #A1190
5215CD•75MHz•PowerPC \$1799 #A1191

Performa 6300CD•100MHz•PowerPC
603 w/PU 16MB RAM • 1GB HD • 4X Apple CD • Apple 15"
Monitor • Apple Extended Keyboard & Mouse • 1.4MB SuperDrive
• 28.8 Fax/Modem w/ Speaker Phone
\$2555 #A1193

Polaroid Slide Scanner
SpringScan 35 Slide Scanner
\$1469 #S8545

Kodak ds digital science NEW

DC40 Digital Camera \$659 #S8804
DC50 Digital Camera CALL #S8806

DAYSTAR Ultimate Upgrade

100MHz Turbo 601 \$1139 #A4509

IIG, IISI, IIvx, IIVi and perfoma 600

Perfoma, Quadra, LC475, LC575, 605, 630

100MHz PowerPro 601 #1159 #A4500

Q510, 650, 700, 800, 950, C610, 650

(610needs an adapter)

Nikon ELECTRONIC IMAGING New

LS-20 Coolscan II Call #S8500

SuperCoolScan Extreme \$1949 #S8503

Sale! EPSON Sale!

Stylus Color ProXL \$1669 #P3291

Stylus Color II InkJet \$376 #P3294

ES-1200C Pro Scanner \$1125 #P8533

The Best Value For Your Money

ATTO

ExpressPCI-MC \$706 #A4519

ExpressPCI-SI PCI \$273 #A4518

SiliconExpressIV(Nubus) \$785 #A4515

UMAX

The Magic of Color

PowerLook Pro+ \$1829 #S8519

PowerLookII Pro Call #S8522

PowerLook II Pro2 Call #S8520

Vista S6 LE \$659 #S8506

Vista S8 LE \$659 #S8511

Vista S12 LE \$729 #S8564

HEWLETT PACKARD

660c 600X300 \$399 #P3223

5MP 600dpi \$999 #P2322

4MV 600dpi \$2649 #P2325

DeskJet 1600CM \$1921 #P3410

AGFA

The complete picture.

Studio Scan II SI \$809 #S8477

Arcus II \$1789 #S8482

DuoScan \$4458 #S8480

Portrait

\$929

Portrait Display Pivot 1700 #M6597

Seagate

BARACUDA SERIES - 7200 RPM

INTERNAL

2.5GB \$799 #H1243

2.5GB-Wide \$859 #H1246

4.2GB \$1222 #H1249

4.2GB-Wide \$1274 #H1252

Elite 9 SERIES

9GB \$2095 #H1255

WACOM

ARTZ II 6 X 8 Tablet \$309 #T9500

ARTZ II 12 x12 Tablet \$399 #T9506

RASTEROPS

SuperScan Monitors

SuperScan 20" \$1349 #M6525

SuperScan 21" \$1869 #M6523

GLOBAL VILLAGE COMMUNICATION

PowerPort PC Cards

Gold 14.4 \$169 #F8152

Platinum 28.8 \$319 #F8150

PlatinumPro28.8Base-T \$479 #F8147

PowerPort Mercury for PB 500s \$319 #M8114

TelePort Platinum \$199 #M8120

TelePort Gold II \$109 #M8123

SupraFAX Modem

SupraExpress 14.4 Plus \$99 #F8106

Fax/Modem 28.8 v.34 \$217 #F8109

SupraExpress 28.8 Plus \$154 #F8107

FWB

incorporated

Jack-Hammer PCI Accelerator #A4417

SledgeHammer8200FMF PCI-W #3874 #H1307

\$359

MACMARKET IS MORE THAN
JUST ANOTHER MACINTOSH
DEALER. TAKE A LOOK AT
OUR GREAT HARDWARE
SELECTION & OUR LOW
LOW PRICES.
Compare & Save

Hot Prices on
DIMMS

8MB • 64BIT • 168PIN \$229 #M1628
16MB • 64BIT • 168PIN \$449 #M1625
32MB • 64BIT • 168PIN \$899 #M1622
64MB • 64BIT • 168PIN \$1799 #M1619

SIMMS

4MB • 32BIT • 72PIN 60NS \$154 #M1601
8MB • 32BIT • 72PIN 60NS \$229 #M1598
16MB • 32BIT • 72PIN 60NS \$444 #M1595
32MB • 32BIT • 72PIN 60NS \$899 #M1604

PCI PowerBook Memory

5300 \$190

4MB • #M1786 \$150 #M1702 \$150
8MB • #M1387 \$286 #M1704 \$286
12MB • #M1388 \$455 #M1706 \$455
16MB • #M1390 \$569 #M1708 \$569
32MB • #M1393 \$1129

**INTERGRATED
MICRO SOLUTIONS**

Twin Turbo 128M (4MB) \$569 #V9240

TRUEVISION

Targa 2000(PCI) #V9200 \$4299

All drives are tested and come with the latest FWB HDT tool kit.. All drives come with full factory warranty. We carry both Internal and External. External Drives come with SCSI Controller & Terminator. External are \$69.00 More

Quantum

1080MB FireBall(12ms) \$285 #H1111

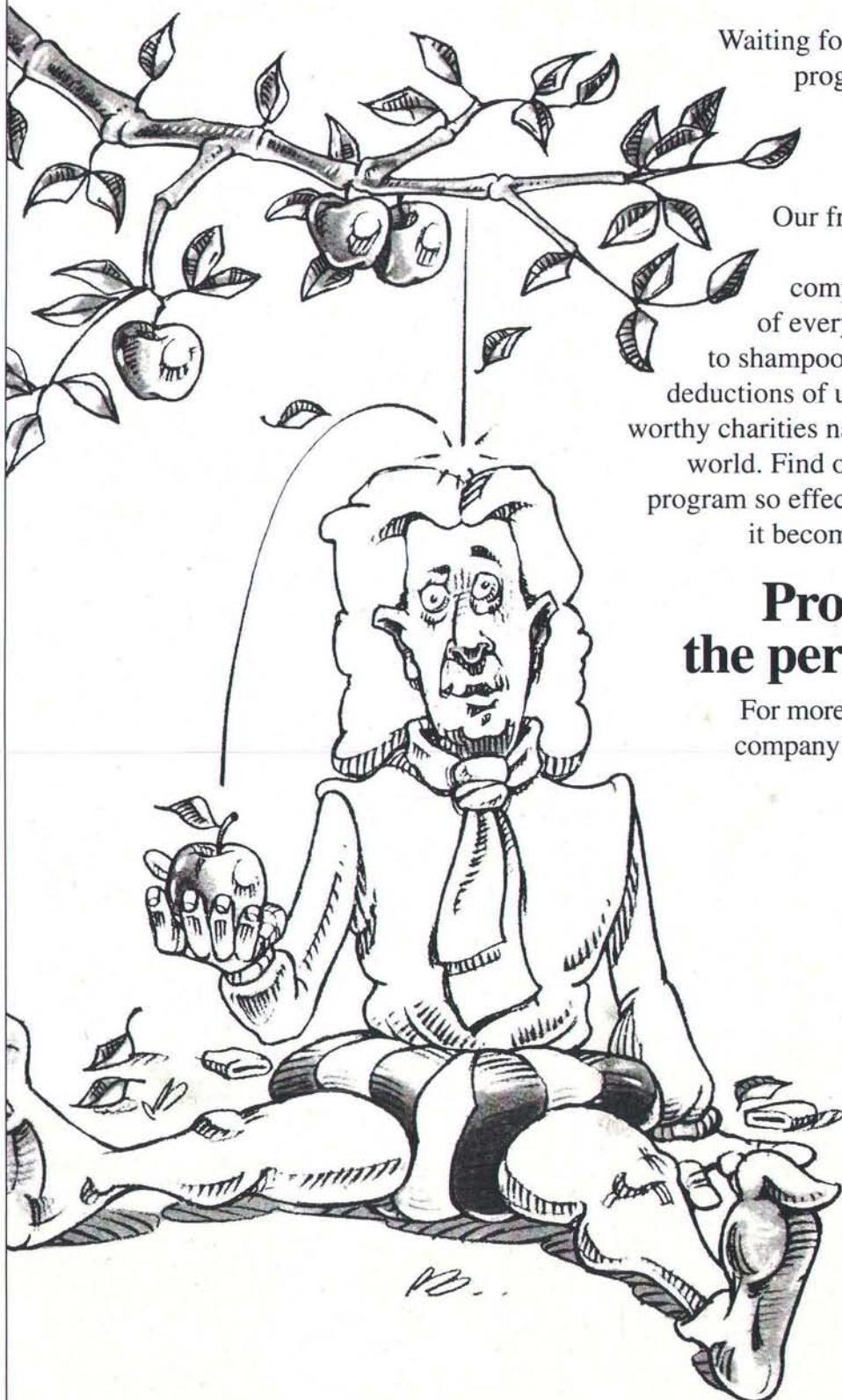
2.5GB Capella(8.5ms) \$679 #H1308

4.3GB GrandPrix(8.6ms) \$959 #H1122

Call 800-905-3034 Local 818-708-6388

Circle 258 on reader service card

A Brilliant Deductionsm



Waiting for a great corporate giving program to fall from the sky?

How does this hit you:
Product giving through
Gifts In Kind America.[®]
Our free donation management services make it easy for companies to turn inventories of everything from photocopiers to shampoo, jeans to laptops into tax deductions of up to twice cost...helping worthy charities nationwide and around the world. Find out how we can develop a program so effective for your company... it becomes the apple of your eye.

Product giving – the perfect solution!

For more information on how your company can get involved, contact:



700 N. Fairfax Street
Suite 300
Alexandria, VA
22314

703-836-2121

Sir Isaac Newton, Mathematician and Physicist, 1642-1727

©1994 Gifts In Kind America

Gifts In Kind America...for more than a decade, helping hundreds of leading companies contribute half a billion dollars in products to tens of thousands of charities.

PRODUCT INDEX

BUSINESS TOOLS



PRODUCT INDEX

Category	Page No.	Category	Page No.
BUSINESS TOOLS	214-216	SERVICES & SUPPLIES	247-248
Bar Code		Computer Insurance	
Electronic Paper		Computer Repair	
Online Services		Data Recovery	
Point of Sale		Furniture	
Presentation		Slides	
Real Estate			
EDUCATIONAL & RECREATIONAL	242-246	SYSTEMS & PERIPHERALS	217-237
Astrology		Switch Box	
Discount Software			
Games			
Genealogy			
Music			
Religion			
Schools			
GRAPHICS	246	UPGRADES & MEMORY	237-242
Clip Art		Memory Upgrades	
CD-ROM Photos			
MOBILE COMPUTING & PDAs	247	ACCOUNT MANAGERS:	.800.888.8622
		Carol Johnstone	415.978.3152
		carol_johnstone@macworld.com	
NETWORKING & COMMUNICATIONS	247	Shannon Smith	415.974.7414
BBS		shannon_smith@macworld.com	
PROGRAMMING & UTILITIES	248	Niki Stranz	415.978.3105
Languages		niki_stranz@macworld.com	
		DTP COORDINATOR:	
		Clayton Haberman	415.978.3132
		clayton_haberman@macworld.com	

Fast Systems 800-508-4444
Mail Order Tel. (508) 653-6911
Fax (508) 650-1872

Distribution EES Companies, Inc.

Point-of-Sale

- Order Entry
- Inventory Control
- Invoicing
- Barcoding
- Fast Cash Retail
- Multi-User
- Purchase Order
- Complete Systems Available
- Credit Card Processing
- Demo Available

CIRCLE 492 ON READER SERVICE CARD

BAR CODE PRO™
Create EPS graphics for your desktop publishing documents. Call for a free demo disk and get the information you need to make an intelligent purchasing decision for Mac or Windows.

800.619.0399
718.499.6293
or fax
718.768.3997

0 012345 7

SYNEX

CIRCLE 450 ON READER SERVICE CARD



Videx Products...Built Tough...Built to Last!



1105 N.E. Circle Blvd., Corvallis, OR 97330
541-758-0521 • Fax 541-752-5285 • <http://www.videx.com>

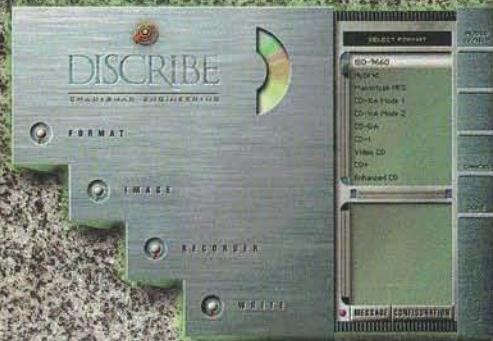
CIRCLE 545 ON READER SERVICE CARD

Bar Code Solutions

Videx data collection equipment is designed for work on the go. Cast-metal cases protect the products and allow them to work reliably in harsh environments.



ROCK SOLID



DISCRIBE

The Most Comprehensive CD Mastering Software Available on the Macintosh



800-487-4420 FOR MORE INFORMATION

CHARISMAC ENGINEERING, INC.

CIRCLE 490 ON READER SERVICE CARD

CREDIT CARD

Authorization & Electronic Deposit Software

- Automatically authorizes and deposits all credit card sales — individually or in batches.
- Integrate with your sales system with AppleEvents, AppleScript & import/export.

INTERNET COMMERCE READY

MacAuthorize 800/483-5526
info@tellan.com <http://www.tellan.com>
Tellan Software, Inc.

CIRCLE 480 ON READER SERVICE CARD

MacLandlord \$399

- Property management & bookkeeping program
 - Easiest-to-use
 - Tracks tenants, vacancies
 - Prints checks, receipts, notices
 - Income & expense statements
 - Handles multiple properties
 - Free telephone support
 - 30 Day money-back guarantee
 - \$199.0 for competitive upgrade
- Labana Management Company
P.O. Box 2037
Dearborn, MI 48123
313/562-6247

Barcode Generation

MacBARCODA High Quality EPS bar codes. The highest precision barcode software available for the Mac.

Label Printing

Label printing with bar codes, text, graphics, sequential numbers and mail merge on PostScript printers with Label Designer or re-leaf thermal printers with MacThermal - supports Zebra, TEC, Datamax, RJS.

Bar Code Readers for Mac or PC \$ 255

Computalabel

28 Green Street,
Newbury MA 01951
Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD

Bar Coding



Call us
for Info

- Portable & Non-Portable Readers
- Radio Frequency Readers
- PostScript Bar Code Fonts

800-345-4220

WORTHINGTON
DATA SOLUTIONS

MACINTOSH TO WINDOWS PEER TO PEER FILE AND PRINT SHARING \$199.

NEW! Personal MACLAN Version 5.5 is the only cross platform networking software that provides peer-to-peer file and printer sharing between Macintosh and Windows or Windows 95. Macs can share files from any Windows PC through Chooser. PCs can mount local Macintosh drives as a logical drive letter.

- Peer to peer sharing of any hard-drive, C-D ROM, or floppy drive
- Print from Windows to any AppleTalk printer
- Print from the macintosh to any Windows post script printer
- No special software required for the Mac user
- Backup you PC from your Mac
- New 32 bit Apple talk VxD provides better performance
- Compatible with Windows for Work groups, NetWare and other LANs

Order now

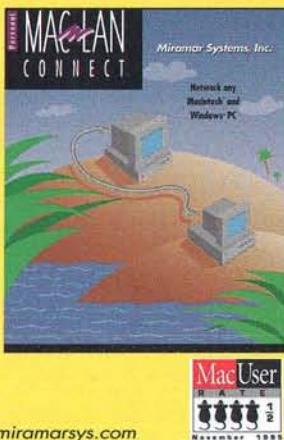
Miramar Systems

800-862-2526

Call for competitive upgrades

email: sales@miramarsys.com www.miramarsys.com

"Simply the best AppleTalk for Windows product you can buy".
MACUser - November 1995



CIRCLE 431 ON READER SERVICE CARD

Hang Ten with MachTen

Make Your Macintosh An Internet Server

MachTen... unlimited possibilities on Classics to PowerMacs.



1. Unlimited Web 'Home' Pages
2. Unlimited TCP Connections
3. Unlimited Mail Accounts
4. Unlimited Internet Addresses
5. Unlimited Domain Names
6. Domain Name Service (DNS)
7. POP Mail Service
8. Mac/UNIX File Sharing
9. Mac/UNIX Printer Sharing
10. Unlimited Possibilities

MacOS and UNIX on a single machine: *The Best Of Both Worlds.*

For more information, or to order call **1-800-6-MACH-10**
Internet: info@tenon.com <http://www.tenon.com>

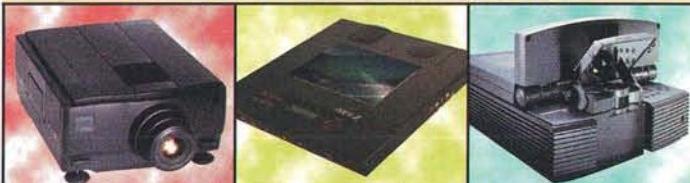


Tenon Intersystems
1123 Chapala Street, Santa Barbara, CA 93101
Tel: 805-963-6983 • Fax: 805-962-8202

©1995 Tenon Intersystems. All trademarks are the property of their respective owners.

CIRCLE 468 ON READER SERVICE CARD

IF WE DON'T SELL IT, IT'S NOT WORTH LOOKING AT.



PANELIGHT IS YOUR ONE STOP SHOP FOR ALL LEADING BRANDS
• SALES, RENTALS, & LEASES
• MONEY-BACK GUARANTEE • OVERNIGHT SHIPPING.

PANELIGHT OFFERS THE BEST IN SELF-CONTAINED LCD PROJECTORS, LCD PROJECTION PANELS, SUPER-BRIGHT OVERHEADS, MULTIMEDIA MONITORS, AND ACCESSORIES FROM THE WORLD'S LEADING MANUFACTURERS; HITACHI, IN FOCUS, PROXIMA, NEC, NVIEW, POLAROID AND OTHERS.



CALL THE EXPERTS AT
PANELIGHT
DISPLAY SYSTEMS, INC.

CALL
PANELIGHT FOR
OUR
FREE CATALOG:
1-800-726-3599.
MON.-FRI.,
6:30AM-5:30PM P.S.T.
24-HR. FAX: 415-986-3817

PANELIGHT DISPLAY SYSTEMS, INC.,
P.O. Box 190940,
SAN FRANCISCO, CA 94119.
OR CALL 415-772-5800.

CIRCLE 481 ON READER SERVICE CARD

Integrate Macs with SGI/Sun/HP

XINET
2560 Ninth Street, #312
Berkeley, CA 94710
tel: 510.845.0555
fax: 510.644.2680
email: world@xinet.com

K-AShare—enables Macintoshes to use a UNIX host as an AppleShare file server.

K-FS—allows UNIX users to access AppleShare volumes on a Mac.

K-Spool—allows Mac and UNIX users to share PostScript printers anywhere on the network.

FullPress—provides integrated prepress file-sharing and print spooling, including OPI!

Convenient GUI!
No additional Mac software required.

CIRCLE 403 ON READER SERVICE CARD

TOTAL INTERNET ACCESS

**\$15 PER MONTH
UNLIMITED! UNCENSORED!**

File Edit View Go Bookmarks Options Directory Help

IDT WEB BROWSER

Save up to 99% monthly with IDT!

Daily Internet Usage:	IDT	AOL	Prodigy	Compuserve
1.5 Hours	\$15/\$29	\$127.95	\$74.20	\$73.70
3 Hours	\$15/\$29	\$260.70	\$206.95	\$161.45
All Day	\$15/\$29	\$2,119.20	\$2,065.45	\$1,389.95

Why pay through the nose to access the Internet with that big, bland on-line service?
(Especially since they censor what you can see and do.)

- IDT believes you have the right to unregulated and uncensored information and entertainment.
- For \$15 monthly we deliver unlimited and uncensored usage with free customer support.
- We also provide free Netscape™ the ultimate WEB browser with every Unlimited Plus account.
- Plus, it's almost always a local call.

To sign up/get information call anytime:

1-800-743-4343

CIRCLE 449 ON READER SERVICE CARD

POINT-OF-SALE

Ensign
SYSTEMS INC.

\$695

POS-IM gives you the necessary tools to secure your profits and build your business.



The One That Apple® Uses

POS-IM

Point-of-Sale • Inventory Management

1-800-409-7678

Ph: (801) 546-1616 • Fax: (801) 546-6490

SOFTWARE and HARDWARE

POINT OF SALE INVENTORY CONTROL

- Retail
- Rentals
- Service
- Manufacturing
- Multi Location

Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth. & Deposit Software
Complete POS Systems as low as \$940.00
Web Site: <http://www.posdirect.com>
call, fax, or e-mail for a FREE CATALOG
(800) 622-7670 posdirect@aol.com
(618) 985-8237 TEL • (618) 985-3014 FAX
Dealer Inquiries Welcome
30 day MBG

CIRCLE 466 ON READER SERVICE CARD

Newton Joins the Mac-Barcode® Family!

One Stop Shopping with Friendly Support from the Experts

Mobile **Fast** **Accurate**

Newton® Walk-Around
Mac-Barcode ProLabel Software
SmartLaser/SmartScanner/SmartPen
Thermal Transfer Printer
Call for Literature & Free Demo Disk

The Mac-Barcode Co.
800-733-7592
FAX 617-934-6233

**EXTRA BONUS
FREE POSTNET & FIM
with any PrintBar Font Purchase**

CIRCLE 562 ON READER SERVICE CARD

LaserMerge Electronic Paper 2.0

Sign your faxes... turn into (your signature here)

Electronic Paper does this and replaces these tools:

- Watermarkers
- Bar Coders
- Paper Designers
- Toner Tuners
- Label Makers
- Print Loggers

Electronic Paper templates optimize & speed up printing, create paper of any size, multi-ups to your design, build pamphlets or stacked prints, and colorize and gray images...



Typical Print Dialog in any application
This is the button you push

- Save images in the printer's disk/memory
- PS Level 2 forms
- Flash print forms
- Borders/Graphics
- Letterheads/Invoices
- Serial numbers
- Copy-dependent pages
- 38 text commands

LaserMerge is not a printer driver! It's a revolutionary printing system that will change the way every application prints...

System 7 required. Works with both PostScript and QuickDraw printers. LaserMerge's miracles require only 32K of system memory. QuickDraw GX is NOT required!
LaserMerge ships ready to install in English, French, German and Spanish.

For 101 ways to use LaserMerge, call (800) 648-6840

30-day money-back guarantee



Competitive Upgrade: If you own ANY Print Utility, you can upgrade to Electronic Paper for \$40. Call for details!

List Price: \$95 **Networked Sites:** start at \$22/unit

Worldwide: (615) 937-6800 **Fax Facts:** (615) 937-INFO

Internet: MGTales@mindgate.com **Fax:** (615) 937-6801

MindGate, LaserMerge, Electronic Paper and their logos are registered trademarks of MindGate Technologies, Inc.

MindGate® Technologies, Inc.
164 Oliver Smith Road
Flintville, TN 37335-5335

CIRCLE 517 ON READER SERVICE CARD

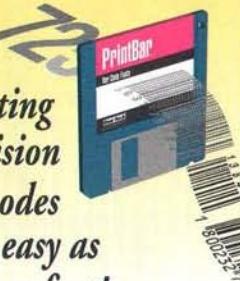
Creating precision bar codes is as easy as using a font!

PRINTBAR™ BAR CODE FONTS

- Compatible with virtually any Macintosh application.
- Choose from: UPC/EAN/ISBN
- Code 39 • Code 128 **NEW!**
- Interleaved 2 of 5 • POSTNET/FIM.
- 90-day money back guarantee.

"This is the best product of its kind, and it's reasonably priced too."

—MacUser review



Scanning bar codes is even easier!

BAR CODE READERS AS LOW AS \$199!

- We offer readers compatible with Macintosh, PC, PS/2, laptops, and serial terminals.
- Instant or remote data entry from bar codes! Scan information into any software application with a wand, CCD, laser gun, badge slot or magstripe reader.
- Don't waste your money on the wrong kind of bar code reader for your situation.
- Our experienced customer service reps can help you choose the correct reader for your needs at the best price!

**Money Back Guarantee
On All Products**

800 232-7625

Visit our Web Site at: www.bearrock.com

4140 Mother Lode Dr., Ste. 100, Shingle Springs, CA 95682
Ph: 916 672-0244 • FAX 916 672-1103
E-Mail us at: Info@bearrock.com

Ad # 496 a

Power Mac		
9500/132	9500/120	
16-2GB CD	16-1GB CD	
\$3495	\$2995	
8500/120	\$3795	\$3295
16-2GB CD	16-1GB CD	
8100/110	7500/100	7500/100
16-2GB CD	16-1GB CD	16-500 CD
CALL	\$2295	\$2145
7200/90	7200/75	7200/75
16-500 CD	8-500 CD	16-1GB CD
\$1595	\$1199	\$1665
Workgroup Servers	7100/80AV	6100/66
CALL	16-700 CD	8-500 CD, DOS Card
	CALL	\$1545
Performa 5215/75MHz \$1595		
Fax/Modem Monitor/KB. with CD Bundle		
4/8/16/32MB MEMORY	\$129/249/439/885	
1GB/2GB/4GB/9GB HD	\$235/589/879/1695	

SALE

radius SUPERMAC.		
	0461 20" Trinitron	PressView 21SR
Multiview 21	Intellicolor 20E	
\$1699	\$1295*	\$3095
	Precision Color	
\$495		
	VideoVision	
\$2395		
	Precision Clr 21	
\$1395		
	LeMans ST	
1152	\$495	
1360	\$1295	
1600	\$1595	
	Spigot Power AV	
	\$645	
	Spigot II Tape	
	\$299	
	Thunder 30 Series	
30-1152/30-1600	Color 30-1152	
Color 30-1600	Color 30-1600	
\$799/1199	\$1585	
	\$1995	
	Thunder 8/1600	
	\$425	
	21TXL	
	\$1995	
	Star	
	\$99	
Color & Mono laser quality, 35 Fonts, 382cps, 360dpi		
4/8/16/32MB MEMORY	\$129/279/499/985	
540/810MB/1.3GB HD F/New PB's	\$159/399/499	

SALE

PowerBook			
520	4-240	\$995	
68LC040 /Sound I-O	Ethernet Port		
9.5" Screen	PPC Upgradable		
to 117MHz			
520C	12-320 Modem	\$2095	
68LC040 /Sound I-O	Ethernet Port		
9.5" Screen	PPC Upgradable		
to 117MHz			
5300	5300cs	5300c	5300ce
8-500	16-750	16-750	32-1GB
\$1495	\$2595	\$3295	\$4675
540C	190	190cs	150
12-320 Modem	CALL	\$1495	\$1645
150	DUO 280C	DUO 2300C	
4-240	12-320 Modem	12-320 Modem	
\$825	\$2695	\$CALL	
STAR	\$99	Megahertz	
Color & Mono laser quality, 35 Fonts, 382cps, 360dpi	14.4 Fax/Modem For 5300 & 190	28.8	
	\$119	\$249	
4/8/16/32MB MEMORY	\$129/279/499/985		
540/810MB/1.3GB HD F/New PB's	\$159/399/499		
Full-Screen, Full-Motion Video Capture & Playback at 30 Frames & 60 Fields.			
TRUEVISION First in Digital Video			
Targa 2000 PCI	\$3295		
Targa 1000 PCI	\$2650		
Internet Address: 74673.1503@COMPUSERVE.COM			
FAX (818)787-5555/FAX Back 787-4548			

CIRCLE 406 ON READER SERVICE CARD

POWERMAC		
7200/75	8/500/CD	1199
7200/90	8/500/CD	1499
7200/90	16/500/CD	1629
7500/100	16/500/CD	2389
7500/100	16/1GIG/CD	2589
8500/120	16/1GIG/CD	3399
8500/120	16/2GIG/CD	3899
9500/120	16/1GIG/CD	3179
9500/132	16/1GIG/CD/VID	3499
9500/132	16/2GIG/CD/VID	3899
6100/66	8/500/CD	1389
6100/66	16/500/CD/DOS	1999
7100/80	8/500	1299
7100/80	8/700/CD	1399
7100/80AV	16/700/CD	1699*
8100/100	8/700	1995
8100/100	16/1GIG/CD	2799
8100/100AV	16/1GIG/CD	2899
8100/110	16/2GIG/CD	2995
WRKGPRPSVR	8150/110	3995
QUADRA 950	8/0	1699

PERFORMAS

6300	16/1.2GIG/CD	2299
6230	16/1GIG/CD/MPG	2399
6220	8/1GIG/CD	1749
6200	8/1GIG/CD	1699
6116	8/700/CD	1499/1299*
6115	8/350/CD	1199*
5215	8/1GIG/CD	1699
640CD DOS	12/500/CD	1449
638CDV	8/250/CD/TV	1299
635	5/250/CD	849*
631	8/500	1299/999*
630	8/250/CD	899*
575	5/250/CD	899*
550	5/160/CD	799*

POWERBOOKS

5300CE/117	32/1GIG	5349
5300C/100	16/750	3399
5300C/100	8/500	2995
5300CS/100	16/750	2595
5300CS/100	8/500	2199
5300/100	8/500	1399
190CS/66	8/500	1889
190/66 MONO	8/500	1599
520	4/240	1099/999*
520C Ref.	4/160 & 240	1299/1399
520C Ref.	12/320/FAX	1999
540C	4/320	2499*
540C	12/500/FAX	3199*
DUO 280	4/240	1599
DUO 280	12/240/FAX	1999
DUO 280C	4/320	2499
DUO 280C	12/320/FAX	2995
150	8/250	989

PRINTERS

StyleWriter 2200 / 2400	349/299
Apple Select 300	499
Apple Personal Laser 300	349*
Apple Personal Laser 320	599
Apple LaserWriter Select 360	1199
Apple LaserWriter 4/600PS	799
Apple LaserWriter 12/600PSC	5899
Apple LaserWriter 16/600PS	2099
HP 4MV	11x17
HP DeskWriter 660	289
HP DeskWriter 660C	399
HP 5MP PostScript	999
HP LJ 4M Plus	1869

COMPU AMERICA "The Computer Specialist" 1-800-533-9005

COME AND SEE OUR HUGE SHOWROOM! 4-YEAR ON-SITE WARRANTY AVAILABLE.

Sales (310) 446-1771

FAX (310) 475-7744

CALL US LAST FOR THE BEST PRICE! WE'RE OPEN ON SATURDAY!!!

APPLE MULTISCAN 15" COLOR DISPLAY \$349!

PM 9500/132 16/1GIG/CD WITH ATI 2MB VIDEO CARD SALE \$3495

PM 8500/120 16/1GIG/CD WITH ATI 2MB VIDEO CARD SALE \$3399

RADIUS

PRESSVIEW 21SR 21"

PRESSVIEW 21 21"

PRECISION COLOR 21"

INTELLICOLOR 20E 20"

SUPERMAC 20"

RADIUS 15" COLOR PIVOT

THUNDER COLOR 30/1600

THUNDER COLOR 30/1152

MONITORS

Apple MS 15" / 1705 17"

Apple 1710AV / 20"

Sony 15SF2 / 17SF2

Sony 17SE1 / 20SE1

NEC 15XV / 17XV

NEC 15XE

NEC 17XP / 21XP

PORTAIT DISPLAY 1700 .26

PORTAIT DISPLAY 1700 .28

10435 Santa Monica Blvd. LA, CA 90025

All prices subject to change without notice and are cash discounted.

STYLEWRITER 2400C ON SALE \$299

CIRCLE 467 ON READER SERVICE CARD

SYSTEMS & PERIPHERALS



AEON

BENEFIT FROM THE
FACT THAT WE HAVE
NO LIFE AND SIT AROUND
MAKING
THIS STUFF WORK.

<http://aeon.com>
1-800-935-2366

CIRCLE 437 ON READER SERVICE CARD

MAC SUPER DISCOUNT CENTER
• BUY • SELL • TRADE • NEW • USED •
Quadra 650/950 \$1499/1649
Performa 450/475 \$649/829
LW 300/320 Toner \$359/559
Performa 630 Complete \$875
Mac LC 575 8/320 KB \$1199
PowerBooks (New & Refurb). Lowest
PowerMacs (New & Refurb). In Stock
Quadrads & Centris In Stock
Macs (All other models) Lowest
Specializing in Educational Orders

MP-Computers
800-445-6767 Orders Only
415.988.0661 Info & International
415.968.0509 Fax

UNBELIEVABLE LOW PRICES

HARD DRIVES (1 YR WRNTY)		
CAPACITY	INTERNAL	EXTERNAL
20MB	\$40	\$80
40MB	\$58	\$98
80MB	\$55	\$135
270MB	\$125	\$165
330MB	\$159	\$199
540MB	\$185	\$225
1080MB	\$345	\$385

FLOPPY DRIVES (90 DAYS WRNTY)
BOOK--\$80 1.44MB--\$150

MEMORY		72 PIN
30 PIN	POB 260, 7000	ALL POWER MACS 6100, 7100, 8100, QUADRADS, CENTRIS, PERFORMAS, LCS,
1MB 1X8-BONS	\$34	1X32 \$4
2MB 1X8-BONS	\$74	2MB 2X32 \$275
4MB 4X8-BONS	\$129	OTHERS CALL

KAHLION, INC. 1-800-317-9989
22699 OLD CANAL RD PH: 714-827-5980
YORBA LINDA, CA 92687 FAX: 714-827-5597
CORP. SCHOOL GOVT. P.O. WELCOME

VISA
OVER 6 YEARS IN BUSINESS
DISCOVER

CIRCLE 444 ON READER SERVICE CARD

WE BEAT ANY PRICE!



POWER PC

Quadrads & Powerbooks
DISPLAYS, SCANNERS
PRINTERS, MODEMS

DEALERS AND INTERNATIONAL SALES OK

800-622-5557

(818) 225-9327

FAX

(818) 225-8627

22543 Ventura Blvd., Suite 226
Woodland Hills, CA 91364

CIRCLE 540 ON READER SERVICE CARD

LOWEST PRICES BEST SERVICE

PCI POWER MACS POWERBOOKS
PERFORMAS POWER PCS
QUADRAS, MONITORS, PRINTERS

CALL FOR QUOTES

800-799-4622

310-358-9000

FAX 310-358-9100

Dealers & International Orders Welcome

Same Day Shipping in USA

Call for any custom made configuration

"Best Computer Source"

-Computer Magazine

We will beat any
verifiable price!

COMPU AGE
THE SOURCE TO MACINTOSH WORLD
303 S. Robertson Blvd., Beverly Hills, CA 90211

CIRCLE 542 ON READER SERVICE CARD

Factory Refurbished Macs

Performa include keyboard, color monitor and ClarisWorks. 90 day warranty.

Perf. 550, 575 and LC 580.....	Call
630 5/250 CD w/14" color monitor.....	\$899
Perf. 630 8/250 CD w/14" color monitor.....	\$999
Perf. 631 8/500 CD w/14" color monitor.....	\$1049
Perf. 631 8/500 CD w/15" Multiscan.....	\$1125
Perf. 6116 8/700 CD w/15" Multiscan.....	\$1349
PowerMac 7100 and 8100.....	Call
Powerbook Duo 230 4/80.....	\$799
Powerbook 145 and 150.....	Call
Powerbook 520 4/240.....	\$1149
Powerbook 520c 4/240.....	\$1499

Visa/Mastercard/American Express No Surcharge.

Rights subject to a 15% restocking fee. Prices subject to change without notice.

Kiwi Computers, PO Box 67381, Los Angeles, CA 90067

Call Toll Free: 1-800-334-5494

International (310) 533-4507 Fax (310) 286-9667

Hours: Mon-Fri 8am-5pm, Sat 9am-2pm PST

CIRCLE 404 ON READER SERVICE CARD

Mac Pro Systems & Software

One Call And Any Ad is a Mac Pro Ad

Small Ad = Huge Savings For You

Buy • Sell • Trade • Repair • New • Used

The PowerMac & PowerBook Experts

Every Model In Stock And Ready To Ship

Lowest Mac & Memory Prices

The Best Repairs Fast

All Parts Available

Call For Our Wholesale Specials Fax

1-800-525-3888

Fax: 408-369-1205

Visa/MC/Amex/Disc/Tech/Education/PO's Welcome

CIRCLE 476 ON READER SERVICE CARD

THE MAC SOLUTIONS HOUSE

BUY, LEASE Or RENT.
Configure Your Own System
Package or Choose A Bundle



DISCOUNT WAREHOUSE

MORE MACS!

Power Mac 7200/75 8/500 HD/4xCD	\$1350
Power Mac 7200/90 16/500 HD/4xCD	\$1799
Performa 6200 100MHz 8/1.2GB/CD/15"	\$1799
Performa 6300 100MHz 16/1.2GB/CD/15"	\$2599

HARD DRIVES, DIMMS & SIMMS

COMPARE OUR DRIVE PRICES w/Our COMPETITORS!

730MB Hard Drive.....	Int \$159 / Ext \$225
1 GB Internal Hard Drive.....	\$269 2GB.....\$595
32MB DIMMs.....	\$925
64MB DIMMs.....	\$1890

PRINTERS, SCANNERS, MONITORS, MODEMS

Hewlett Packard LaserJet 4MV (16ppm, 600dpi trolley)	\$2695/\$99*
Lexmark 12PPM, 1200DPI Laser Printer.....	\$1595
EPSON Stylus PRO 7200dpi Photographic Color & B/W Inkjet Printer.....	\$599
MAG 17" 26 MultiRes Trinitron Color Monitor.....	\$725
EXTERNAL 28.8 FAX/MODEM.....	\$159

UMAX MIRAGE D-16L 30-Bit TABLOID Scanner.....\$5895/\$150 p/m

Large Format (12"x17") • 800dpi • PhotoShop, OCR & MagicMatch Software

*per month on ABC Lease or Finance Plan

WE CARRY HARDWARE & SOFTWARE FROM VAST
NUMBER OF MANUFACTURERS - CALL FOR DETAILS

ADVANCE
BUSINESS
CENTER

**ONLY
\$155
per month**



INSTANT CASH BACK or REBATE!

Ø DOWN, INSTANT CASH BACK and BEST
PAYMENTS on LEASE PLANS

NEW BUSINESS OR SELF EMPLOYED WELCOME!

THE MOBILE OFFICE SYSTEM

A Complete PowerPC Office Anywhere You Go!!

PowerBook 5300C 100MHz 16 RAM/750 HD/ Color Active Matrix Screen (PowerPC, 16bit Sound, 2 PC Card Slots, Infra-Red, & MORE!)	\$1895
Targus Deluxe Carrying Case	NEW! \$340 Part.
HP DeskWriter 3000	NEW! 340 Part.
B/W & Color Printer	
ABC DELUXE PowerBundle: Symantec, GoodWorks, Norton Utilities, Hard Drive Utility Software & Surge Suppressor.	

PowerBook 5300CS 8/500 Executive Package (same as above, but w/PowerBook 5300CS 8/500.....\$3279/\$109 p/m)

PB 5300CS 100MHz 8/500MB.....\$2299
PB 5300C 100MHz 16/750MB.....\$3595

PB 5300CE 117MHz 32/1GB w/28.8 Modem, Case.....\$181 p/m

MAC CLONE AUTHORIZED DEALER

RADIUS 8100/ (110 MHz) 16/700 4X CD, Keyboard.....\$1895

POWER COMPUTING 8MB/850/4X CD 120MHz PPC.....\$1995

POWER COMPUTING 8MB/500 120MHz PPC.....\$1785

Please Call for More Memory, Larger HD or CD ROM Prices

CALL ABOUT NEW SUPERMAC/UMAX CLONES!

Advance Business Center • 23510 Telo Ave., Suite 5, Torrance, CA 90505

1 (800) 499-4073
Fax: (310) 223-1380

CIRCLE 483 ON READER SERVICE CARD



Macworld
SHOPPER®

SYSTEMS & PERIPHERALS

MDW Technologies
1-800-883-7483

HARD DRIVES

WE SPECIALIZE IN
AUDIO/VISUAL & BARRACUDA

DRIVES
MICROPOLIS SEAGATE
2.1GB 4221AV 8ms \$895. ST12550N 8ms \$925.
4.3GB 3243AV 8ms \$1295. ST15150N 8ms \$1295.
9.0GB 1991AV 10ms \$2195. ST410800N 11ms \$2095.

WE ONLY SELL
HI-PERFORMANCE DRIVES
FASTEST DRIVES MADE

CIRCLE 430 ON READER SERVICE CARD

WANTED:
USED MACS!
BUY • SELL • TRADE

Top \$ Paid Via FedEx Next Day Air!

Friendly, courteous service
from the Pacific NW!

PACIFIC COMPUTER EXCHANGE
PORTLAND, OR
1-800-790-3881
FAX 503-239-8424

CIRCLE 451 ON READER SERVICE CARD

Powermacs

7200/75 8/500/cd Call
7200/90 16/1gb/cd 1999
7500/100 16/500/cd 2459
7500/100 16/1gb/cd 2699
8500/120 16/1gb/cd Call
8500/120 16/2gb/cd Call
9500/120 16/1gb/cd Call
9500/132 0/0/0 2699
9500/132 16/1gb/cd 3699

Performas

6400CD 12/2000/DOS Call
6116CD/60 8/700 Call
5215CD/75 8/1gb Call
6200CD/75 8/1gb Call
6205CD 8/1gb Call
6220CD 16/1gb Call
6300/100 CD Call
All Performas come with monitor, keyboard, modem and bundled softwares/cds no monitor with 6220

Workgroup Servers

6150/16/700/AS 2599
6150/16/700/ed 2079
6150/16/700/ed/Inet 2399
8150/16/1gb/cd/DT 4745
8150/16/1gb/ed/Inet 3999
8150/16/1gb/ed/Inet/AS 5499
9150/16/2gb/cd/dat 6669
9150/16/2gb/cd 5499

Apple Printers

Stylewriter 1200 Call
Stylewriter 2400 Call
Port. Stylewriter 2200 399
Laser Select 320 699
Laserwtr 4/600 PS Call
Laser Select 360 Call
Col. Laserwtr 12/600 5999

Call for current best prices & items not listed

Powerbooks

190/66 8/500 1599
190CS/66 8/500 1879
2450 300/800 1699
5300cs/100 8/500 2259
5300/100 8/500 3069
5300/100 16/750 3599
PB 5300ce/117.32/1g 5399
Duo 2300C Call

Apple Monitors

Multiplescan 14" 345
Apple 15" Color Call
Multiplescan 1705 749
Applevision 1710 945
AppleVision 1710/VA Call
Multiplescan 20" 1899

Hewlett Packard

Deshwriter 600 259
Deskwriter 340SF 375
Deskwriter 660C 399
Laserjet 5MP 999
Laserjet 4M Plus 1849
Laserjet 4M 1899
Super Coolscan Call

Umax

Powerlook Call
UC 1260 w/Photoshop 899
Vista S/688 599/699

Agfa

Studio scan II Si 879
Arcus II 1799
Transparency F/II Si 385

N.E.C

XE15/XP15 575/675
XE17/XP17 975/1025
XE21/XP21 1669/1939
XV15/XV17 445/749

Epson

ES-1000C 719
ES-1200C 919
ES-1200C Pro 1095
Cir. Stylus II 475

Nikon

Coolscan LS10E 1269
ScanTouch AX 1200 1569
Super Coolscan Call

UMax

Powerlook Call
UC 1260 w/Photoshop 899
Vista S/688 599/699

Agfa

Studio scan II Si 879
Arcus II 1799
Transparency F/II Si 385

Sony

CPD-15 SF2 495
CPD 17 SF2 865
Lease Specials

Epson

7200/90 16/500/CD With ext. keyboard/15" monitor only \$80/month

7500/100 16/1GB/CD With ext. keyboard/1710 monitor only \$131/month

8500/120 16/1GB/CD With ext. keyboard/Apple 20" m

Only \$188/month

9500/132 48/TGB/CD

ATI Video /Apple 20" only \$ 216/month

7200/90 16/500/CD

\$65/month

7500/100 16/1GB/CD

\$100/month

8500/120 16/1GB/CD

\$127/month

All lease payments

are for 36 month FMV

Mac Storm

In California Since 1988

800-594-4007

Fax 800-329-9553

Local & Int'l tel (310)829-9780

Fax (310)315-1009

International & Dealer sales Welcome

Corporate Leasing Available

Prices reflect 3% cash discount and may change

We accept VISA, M/C, AMEX, DISCOVER

CIRCLE 440 ON READER SERVICE CARD

A.M.S.

"The Professional Solutions"

1.800.847.4622

*** BUSINESS LEASING ***

TEL: (310) 314-7372

FAX: (310) 314-7512

Prices are subject to change without notice

Advanced MAC Systems

POWER MAC	POWERBOOK	MONITORS
7200/75 8/500/CD	\$1299	2300c/100 8/750Mb
7200/90 16/500/CD	\$1669	5300/100 8/500Mb
7200/90 24/1Gb/CD	\$2069	5300c/100 8/500Mb
7500/100 16/1Gb/CD	\$2579	5300c/100 16/750Mb
7500/100 48/2Gb/CD	\$3999	5300cs/100 8/500Mb
8500/120 16/1Gb/CD	\$3559	5300cs/100 16/750Mb
8500/120 48/2Gb/CD	\$5149	5300ce/117 32/1.1Gb
9500/120 32/1Gb/CD	\$3859	
9500/120 80/2Gb/CD	\$5679	
9500/132 48/2Gb/CD	\$4799	Color LW 12/600 PS
9500/132 80/2Gb/CD	\$5869	LW 16/600 W/Toner
9500/132 80/2Gb/CD	\$5869	LW Select 360 w/Toner
9500/132 80/2Gb/CD	\$5869	LW 4/600 PS w/Toner
9500/132 80/2Gb/CD	\$5869	Color StyleWriter 2400
9500/132 80/2Gb/CD	\$5869	FARGO Pictura 310e
7500/100 CD	\$629	Mitsubishi 21TX
ATI Xclaim GA 4MB PCI	\$469	Pressview 21SR
Diamond Javelin Video 3240XI 4MB	\$539	NEC XP21 Display
ATTO ExpressPCI SCSI	\$349	Precision View 17
FWB JackHammer Accelerator	\$389	Apple 15" MultiScan
Radius Thunder Cir 30/1600 PCI	\$1899	Apple 15" MultiScan
Radius Thunder Cir 30/1152 PCI	\$1549	Apple 17" MultiScan
EASYCOLOR 1600/16	\$549	Apple 17" MultiScan
IMS TWIN TURBO 128M 4MB	\$559	Apple 17" MultiScan
TRUVISION TARGA 2000 NUBUS	\$3839	Apple 17" MultiScan
TRUVISION TARGA 2000 PCI	\$4389	Apple 17" MultiScan
Perfoma 6300CD 16/1Gb/CD	\$2479	IOMEGA ZIP
7500/100 CD	\$3575	\$185
32/1Gb/CD, 15" Monitor		
2Mb VRAM, Apple Keyboard		
8500/120 CD	\$5849	
48/2Gb/CD, 17" Monitor		
4Mb VRAM, Apple Keyboard		
9500/132 CD	\$8699	
80/2Gb/CD, 21" Monitor		
ATI 4Mb Xclaim GA, Apple Keyboard		

Graphic Card & Accelerator * SPECIAL * SPECIAL *

Matrox MGA Millennium PCI 4MB	\$629	7500/100 CD	\$3575
ATI Xclaim GA 4MB PCI	\$469	32/1Gb/CD, 15" Monitor	
Diamond Javelin Video 3240XI 4MB	\$539	2Mb VRAM, Apple Keyboard	
ATTO ExpressPCI SCSI	\$349		
FWB JackHammer Accelerator	\$389		
Radius Thunder Cir 30/1600 PCI	\$1899		
Radius Thunder Cir 30/1152 PCI	\$1549		
EASYCOLOR 1600/16	\$549		
IMS TWIN TURBO 128M 4MB	\$559		
TRUVISION TARGA 2000 NUBUS	\$3839		
TRUVISION TARGA 2000 PCI	\$4389		
Perfoma 6300CD 16/1Gb/CD	\$2479		

Universities & Government P.O.'s are Welcome. Int'l orders (310)-314-7512

VISIT OUR WEB SITE AT "WWW.WWORLD.COM/AMS"

CIRCLE 470 ON READER SERVICE CARD

MACMAIL
CALL WITH THE LOWEST PRICE EVER CALL

MACS, ETC

PMAC7200/75-8/500/CD	....\$130
PMAC7200/90-8/500/CD	....\$159
PMAC7200/90-16/500/CD	....\$1775
PMAC7500/100-16/500/CD	....\$2575
PMAC7500/100-16/1Gb/CD	....\$2750
PMAC8500/20/16/2Gb/CD	....\$3740
PMAC8500/20/16/2Gb/CD	....\$4295
PMAC9500/20/16/1Gb/CD	....\$3450
PMAC9500/32/16/1Gb/CD VI	....\$3740
CUSTOM CONFIGURATIONS	CALL

STORAGE DEVICES

QUANTUM 700MB EXT.	....\$210
QUANTUM 1.1Gb EXT.	....\$295
SYQUEST 135MB E-Z DRIVE	....\$229
SYQUEST 88MB EXT.	....\$289
SYQUEST 200MB EXT.	....\$440
SYQUEST 270MB EXT.	....\$432

Prices include Apple Display, Keyboard, Modem & Software

PRINTERS, ETC.

STYLEWRITER 1200	....\$229
COLOR SW 2400	....\$309
COLOR WS 2400	....\$359
LW 4/600 PS/W/Tnr	....\$720
LW PRO 16/600 W/TNR	....\$1995
LW 12/600 W/KIT	....\$610
GENERIC EXTENDED KB	....\$50
APPLE EXTENDED KB	....\$143
APPLE DESIGN KB	....\$81
APPLE CD 600E W/S/W	....\$299

DRIVES

POWERPC 5300 CS 100	8/500	....\$2345
POWERPC 5300 CS 100	16/750	....\$2825
POWERPC 5300 C 100	8/500	....\$3195
POWERPC 5300 C 100	16/750	....\$3750
PB 190/66 8/500		....\$1745
PB 190/66CS 8/500		....\$2055

UPGRADES

•SE HABLA ESPANOL	
•Int'l Orders Welcome	
•Leasing Plans	
•FEDEX+UPS+Etc...	
•Prices may change	
•Price represent cash discounts	

MACMAIL

Miami, Florida 1-800-622-6844

International call (305) 639-9646

CIRCLE 523 ON READER SERVICE CARD

800-MAC-6844

CIRCLE 523 ON READER SERVICE CARD

MACWORLD April 1996

219



MAC PROFESSIONAL INC.

6430 VARIEL AVE, #105, WOODLAND HILLS, CA 91367

800.244.4622

FAX 818.719.9115

VISIT OUR WEB SITE <http://www.w2.com/macprofessional/>
LOCAL & INTERNATIONAL ORDERS 818.719.9200

ALL PRODUCTS CARRY 1 FULL YEAR WARRANTY. ALL PRICES ARE CASH DISCOUNTED & SUBJECT TO CHANGE. WE ACCEPT VISA/MC/AMEX. NO TAX OUTSIDE CA. CONSULTANT, DEALER & INTERNATIONAL SALES WELCOME.

PCI POWER MACS



7200/75	8/500-CD	1333
7200/75	16/1000-CD	1699
7200/75	48/1000-CD	2475
7200/90	16/500-CD	1695
7200/90	24/1000-CD	2077
7200/90	40/1000-CD	2577
7500/100	16/500-CD	2395
7500/100	24/1000-CD	2899
7500/100	48/1000-CD	3555
8500/120	16/1000-CD	3550
8500/120	24/2000-CD	4095
8500/120	48/4000-CD	4995
9500/120	CALL	
9500/132	16/2000-CD	3650
9500/132	48/2000-CD	4575
9500/132	80/4000-CD	5755

DIMM MEMORY

8 / 16 MB	255 / 455
32 / 64 MB	899 / 1799
256 K / 512 K CACHE	249 / 329
1MB / 2 MB VRAM	85 / 185

SIMM MEMORY

4 MB	126
8 MB	249
16 MB	444
32 2K REFRESH	888

ATTO

EXPRESS STRIPE RAID	333
EXPRESS PCI-SC PCI	339
ATTO PCI-MC MULTI CHANNEL	759
SILICON EXPRESS IV NUBUS	888

PERFORMAS

6200	8/1000-CD	1785
6200	16/1000-CD	1995
6220	16/1000-CD-TV	1875
6300	16/1.2-CD	2495

QUADRA 950

INCLUDES 17" RADIUS & KEYBOARD	
16 / 1000	2695
32 / 2000	3555
64 / 4000	4555

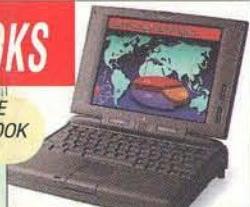
SCANNERS



AGFA ARCUS II	1777
AGFA STUDIO SCAN II SI	888
AGFA VISION 35	3888
NIKON SUPER COOLSCAN	1950
NIKON LS4500 UP TO 4X5 FILM HI-RES	7995
POLAROID 2700 DPI	1395
UMAX POWERLOOK	1888
VISIONEER VX	367

POWERBOOKS

FREE CARRYING CASE
WITH EVERY POWER BOOK
PURCHASE



5300 CE	32/1GIG	5299
5300 C	16/750	3545
5300 C	8/500	2999
5300 CS	16/750	2695
5300 CS	8/500	2295
5300	8/500	1799
190 CS	8/500	1855
190	8/500	1595
150	8/250	1049
520 C/540 C	CALL	

SPECIAL

520	4/240	1177
520	8/500	1399
520	12/800	1775



DISKOVERY 650 CDR WITH
QUIK TOPIX AND 5 CD'S
1499

YAMAHA / JVC / FWB CD WRITER

4X CD WRITER & TOAST SOFTWARE	2750
2X CD WRITER	1250
JVC DOUBLE SPEED CDR	1175
JVC QUAD SPEED CDR	2555
FWB 2X CDR	1444
FWB 4X CDR	2675

CAMERA

LEAF LUMINA	4650
LUMINA AUTO 35	3450
LUMINA SLIDE	1950
KODAK DC 40	825
CHINON ES 300	949
QUICK TAKE 150	675
FUJI DS 505	10495
FUJI DS 515	13333
DICOMED 4X5 VIEW CAMERA	19995



GLOBAL VILLAGE / SUPRA

SUPRA FAX / MODEM 28.8 v.34	199
SUPRA EXPRESS 28.8 PLUS	149
TELEPORT PLATINUM	189
MERCURY 19.2 FOR 520/540C	299
(PCMCIA) 28.8 FOR 5300	359
(PCMCIA) 28.8 W/10BASE-T	499

EXTERNAL DRIVE

SYQUEST 88 / EZ DRIVE	369/239
SYQUEST 200 / 270 MB	475/469
ZIP DRIVE / JAZ DRIVE	196/579

MONITORS

14/15/17" APPLE VISION	349/379/949
1705/1710AV MULTISCAN	777/995
APPLE 20" MULTISCAN	1859
RADIUS PRECISION VIEW 17	888
RADIUS PRECISION VIEW 21	1988
RADIUS PRESSVIEW 17SR	1950
RADIUS PRESSVIEW 21SR	3095



SONY

17 SF II	895
17 SE I	1095
20 SF II	1855
1425	315



PCI GRAPHIC CARDS

RADIUS THUNDER 30/1152	777
RADIUS THUNDER 30/1600	1144
RADIUS THUNDER COL 30/1152	1595
RADIUS THUNDER COL 30/1600	1888
EA RESEARCH 1600/16	535
TRUVISION TARGA 2000 PCI	4499
TRUVISION TARGA 2000 NUBUS	3849
VIDEO VISION STUDIO 2.0	3150

PRINTERS

LASER 320	539
LASER SELECT 360	1177
LASER16/600	2050
COLOR LASER 12/600	5995
LASER 4/600	825
COLOR STYLE WRITER PRO	395
COLOR STYLE WRITER 2400	319
STYLE WRITER 1200	175
HP 5 MP	999
HP DESK JET 850 C	499
HP 4 MV 11X17	2695
HP 1600 CM	1949
GCC PRINTERS	CALL
IRIS PRINTER	CALL
FUJI PG 3000 400DPI	18700
FARGO PICTURA 310	3444
FARGO PRIMERA PRO	1375
EPSON STYLUS PRO 11X17	1795

STAR COLOR PRINTER

99

FACTORY REFURBISHED

PERFORMA 630 4/250 15" REF	950
RADIUS 17" PRECISION COLOR REF	750
RADIUS 20" PRECISION COLOR REF	1450
SUPER MAC 20" REF	1095
SUPER MAC PRESSVIEW 21 REF	1595

- GOV'T, FORTUNE 1000 & SCHOOL P.O.'S., WELCOME • LEASING AVAILABLE •
- WE GUARANTEE BEST AVAILABILITY, PRICE, SERVICE, DELIVERY & SUPPORT •
- WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS SINCE 1988 •

CIRCLE 4950N READER SERVICE CARD

Disk Arrays 2 GB TO 32GB



- Raid levels 0, 1, & 5
- Up to 30 MB/sec transfer rate
- Plug and play convenience
- 3-year warranty - parts and labor
- AV Drives - Fast & Wide SCSI

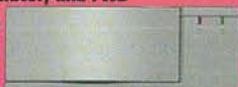
For VideoVision, TARGA, and Media 100
on Quadra and PowerMac Systems

SCSI Array \$2895.00

1GB External Hard Drive

Includes cable, terminator, and FWB
formatting software.

\$299.99



800-801-4MAC

APEX™ 4.6 GB External Optical Hard Drive

Faster than the average hard drive,
lower cost-per-megabyte, 30 year
shelf life. Average
seek time 17msec.,
transfer rate 4.5 MB/sec.

FREE 4.6 GB magneto / optical
rewritable cartridge with purchase.



\$1499.00

POWERMAC

9500/120	0/0/NO/CD	\$2650
9500/120	16/0/CD	2950
9500/120	16/1GB/CD	3150
9500/120	32/1GB/CD	3575
9500/120	48/2GB/CD	3995
9500/132	0/0/NO/CD	2750
9500/132	16/1GB/CD	3325
9500/132	16/1GB/CD/ATI	3525
9500/132	16/2GB/CD	3875
9500/132	48/2GB/CD	4725
8500/120	16/1GB/CD	3695
8500/120	48/1GB/CD	4495
8500/120	16/2GB/CD	4295
8500/120	48/2GB/CD	5095
7500/100	16/500/CD	2425
7500/100	16/1GB/CD	2625
7200/75	8/500/CD	1299
7200/90	8/500/CD	1499
7200/90	16/500/CD	1699

POWERBOOKS

190	8/500	\$1629
190CS	8/500	1899
5300	8/500	1625
5300CS	8/500	2298
5300CS	16/750	2799
5300C	8/500	3099
5300C	16/750	3525
5300CE	32/1GB	5425
DUO230OC	8/750	3275
150	4/250	CALL
520	4/240	1395
520C	4/240	1645

QUADRA / PERFORMA

Performa 638	8/350/CD	\$1325
Performa 5215	8/1GB/CD	1725
Performa 6116	8/700/CD	1489
Performa6200	8/1GB/CD	1725
Performa6205	8/1GB/CD	1950
Performa6220	16/1GB/CD/TV	1745
Performa6300	16/1.2GB/CD	2495

MONITORS

Apple	Multiscan 15"	379
Apple	Multiscan 1705	750
Apple	Multiscan 1710	CALL
Apple	Multiscan 1710AV	1020
Apple	Multiscan 20"	1895
Sony	CPD15SF2 15"	499
Sony	CPD17SF2 17"	859
NEC	XV15 15"	465
NEC	XV17 17"	749
NEC	XP21 21"	2195
Radius	PressColor 17	925
Mag	DXF17"	699
Viewsonic	20G 20"	1475

HARD DRIVES

INTERNAL:

Apple	700MB 3.5"	\$ 169
Quantum	1GB Fireball 3.5"	259
Conner	2.1GB 2105 3.5"	595
Seagate	2GB Barracuda 3.5"	799
Quantum	2.1GB Atlas LP 3.5"	729
Quantum	4.2GB GrandPrix 3.5"	899
Seagate	4GB Barracuda 3.5"	1199

EXTERNAL:

Apple	700MB	219
Quantum	1GB Fireball	299
Quantum	4.2GB GrandPrix 3.5"	979
Conner	2.1GB 2105	665
Syquest	200 Meg Drive	410
Syquest	270 Meg Drive	410
Syquest	EZ-135 Drive	229
Iomega	Zip Drive	189

CD ROM

Pinnacle	230MB Tahoe	499
Apple	600E Quad Speed	299
Pioneer	DWS114X no software	2850

Pinnacle RCD1000

(2x Recordable/Includes TOAST and 2CDs)

SCANNERS

AGFA	StudioScan II	\$ 859
HP	Scanjet 4C	915
HP	Scanjet 4s	CALL

UMAX	UC1260 / Phtshp.LE2	699
Umax	Vista6Scanner	549

Microtek	Powerlook 2	2899
Microtek	Scanmaker 35t	659

Microtek	Scanmaker III / Phtshp.1949	1949
Epson	1200C	935

Nikon	Super Cool Scanner	1845
Nikon	ScanTouch AX1200	1175

Visoneer	Paperport VX	349
Visoneer	Paperport	289

MODEMS

Apple	GeoPort Telecom Kit	\$ 128
Supra	ExpressModem288	179
Supra	FaxModem288	199
GlobalVillage	Teleport Platinum	28.8
U.S. Robotics	Mac & Fax Sportster	209
Megahertz	CruzCard 28.8	269
Megahertz	CruzCard14.4	189

PRINTERS

Apple	StyleWriter 1200	\$ 249
Apple	Color StyleWrt 2200	349
Apple	Color StyleWrt 2400	349
Apple	LW 4/600PS	795
Apple	LW Select 360	CALL
Apple	LW 12/600PS/Color	5798
HP	DeskWriter 660C	389
HP	DeskJet 855C	495
HP	LaserJet 5MP	999
HP	LaserJet 4MPlus	1850
HP	LaserJet 4MV (11x17)	2715

MISC.

Connectix	QuickCam	\$ 95
MouseSystems	Optical Mouse	49
Wacom	ARTZII 6x8	299
Radius	Videovision Studio	3100
TrueVision	TARGA 2000	3999
Atto	Fast&Wide SCSI/PCI	CALL
FWB	Fast&Wide SCSI/PCI	375
Syquest	200 Meg Cartridges	65
Syquest	270 Meg Cartridges	59
Syquest	135 Meg Cartridges	CALL
Card Scanners		Call

SOFTWARE

Adobe	Photoshop 3.0.4	\$ 399
Adobe	Premier 4.0	499
Pagemaker	6.0	399
SoftWindows	2.0 PwrMac	279
Adobe	Illustrator 5.5	299
Quark	Xpress 3.3 Pwr Mac/68kMac	639/585
Form Z	2.7	SPECIAL
Electric Image		CALL

MEMORY

SIMMS/DIMMS/POWERBOOK

4	Meg Simms 72 Pin	109
8	Meg Simms 72 Pin	199
16	Meg Simms 72 Pin	410
32	Meg Simms 72 Pin	799
8	Meg Dimms	219
16	Meg Dimms	429
32	Meg Dimms	879
64	Meg Dimms	CALL
8	Meg Powerbook 5300c	295
16	Meg Powerbook 5300c	575
32	Meg Powerbook 5300c	999
1MB	VRAM	75
256K	L2 CACHE	199
512K	L2 CACHE	329

Lease for only \$175 per month*

Power Macintosh 7500/100
16MB, 1GB HD, CD
Sony CPD-17SF2 Monitor
Apple Design Keyboard
Complete System Price: \$3,563

Lease for only \$120 per month*

Power Macintosh 8500/120
16MB, 2GB HD, CD
Apple 1710AV Monitor
Apple Design Keyboard
Complete System Price: \$5,199

Lease for only \$185 per month*

* Lease payment based on 36
month term with 10% buyout.

Phone: 800-801-4622

Fax: 310-533-0501 / Email: Microult@aol.com

All prices reflect C.O.D./Lease orders and subject to change without notice.
Not responsible for typographical errors. All Returns subject to 15% restocking charge.

C.O.D./MasterCard/Visa/Discover/AmericanExpress

SYSTEMS & PERIPHERALS



Your Digital Video Electronic Publishing Specialists

800-429-7779
Fax 714-375-6397

17131 Beach Boulevard
Huntington Beach CA 92647

PowerMac

Performa

Software

PM 9500/132 • 32/1GB/CD	\$3,995
PM 9500/132 • 32/2GB/CD	\$4,250
PM 7500/100 • 16/2GB/CD	\$3,150
PM 7500/100 • 32/4GB/CD	\$3,850
PM 8500/120 • 32/1GB/CD	\$3,925
PM 8500/120 • 32/4GB/CD	\$4,675
PM 7200/75 • 8/500/CD	\$1,250
PBK 5300CS 16/750	\$2,795
PBK 190CS	\$2,595

Digital Video

Performa 5215	\$1,895
Performa 6116	\$1,595
Performa 6200	\$1,749
Performa 6205CD	\$1,895
Targa 2000	\$3,775
Radius Video Vision PCI	SCall
Radius Telecast	\$4,495
Avid Composer 8000 Package	\$72,000

Strata Studio Pro Blitz	\$795
Authorware Pro 3.0	\$3,795
Adobe After Effects v3.0 II	\$595
Adobe Photoshop v3.0.1	\$495
Electric Image	\$3,775
Director Multimedia Studio	\$1,495
Director 4.04	\$850
Adobe Page Maker v6.0	\$595
Adobe Premiere	\$425
After Effects Production	\$1650

Targa Workstation

PM 9500/132/48MB/1GB/CD

COMPONENT AVAILABLE

Targa 2000 PCI, Adobe Premier 4.2, 17" Color Monitor, Apple Design Extended, 4.2GB Disk Array Wide PCI, Adobe After Effects v3.0 Production, Boris Effects. Reflects Cash Price

Pre Press System

Complete Color Pre Press System

Lease/Purchase \$575 per month; Includes Power Mac 6100 24/500, 17" Color Monitor, Software, Extended Keyboard, AGFA Color Scanner, Color Proof Printer, Imagesetter w/Rip & Processor

Radius Workstation Low!!!

Qudra 840av/32/8GArray/CD

Complete editing system at the lowest price in the world Features: Radius 8G studio array, radius video vision, adobe premiere 4.2, 500M internal source drive, Viewsonic 17G High resolution monitor, keyboard, and much more!!!!

4 Processor Workstation

DayStar Genesis MP (4 Processor)

Includes four processor, color match, Adobe Charge Extension, Kodak Color Management; 4xcd, 12 Dimm Connector; 6 PCI Slots & Much more !!

CIRCLE 405 ON READER SERVICE CARD



PC SYSTEMS DESIGN

CALL NOW

(800) 833-0128

Call For Our
NEW CATALOG

HARD DRIVES

	INTERNAL	EXTERNAL
850MB Trailing 11ms (Quantum)	\$215	\$275
1080MB Fullball 11ms (Quantum)	\$259	\$319
2.1GB M4221 8ms (Micropolis)	\$649	\$709
2.2GB Capella 8.5ms (Quantum)	\$665	\$785
2.5GB Barracuda 2 8ms (Seagate)	\$935	\$1055
4.2GB Grand Prix 8.5ms (Quantum)	\$975	\$1055
4.3GB M3243 8ms (Micropolis)	\$1170	\$1250

All Hard Drives Come With A 30 Day Money Back Guarantee
All Hard Drives Come With A 30 Day Money Back Guarantee
HD Add \$60. For Full Height Drive Case Add \$120
We Also Carry: Syquest, I-Omega, Daystar,
Radius And Much More! So Call Now!

OPTICAL DRIVES

Olympus 230 MB Magneto (Ext.)	\$475
Olympus 1.3GB Magneto (Ext.)	\$1399
PinnacleMicro APEX 4.6GB (Ext.)	\$1569
PinnacleMicro APEX 4.6GB (Media)	\$189
TORAY Phasewriter DUAL PD "New"	\$625
TORAY PDM 650 Media "New"	\$49

CD-ROM DRIVES & SCANNERS

SONY (CDS-76SB) 4 Speed External	\$219
TOSHIBA (3701) 6 Speed External	\$439
Visioneer PaperPort Vx	New!
UMAX PowerLook Pro	\$1895
Microtek IISPX	\$639
Epson Action Scanner II	\$495

MODEMS & PRINTERS

TelePort Platinum 28.8	\$195
PowerPort Platinum PC Card 28.8	\$339
Supra Express 28.8 Plus Modem	\$169
Supra FAXModem 28.8 MC	\$209
HP DeskJet 850C Printer	\$499
HP LaserJet 5MP Printer	\$995

MONITOR SPECIALS

SONY Trinitron 15xs .25	\$419
SONY Multiscan Trinitron 15sf II	\$869
SONY Multiscan Trinitron 17se II	\$1779
PORTRAIT Pivot 1700 .28 Dot	\$969
PORTRAIT Pivot 1700 .26 Dot	\$1029

CALL FOR MEMORY PRICING

Buy From The Systems & Peripherals Specialists!

CIRCLE 514 ON READER SERVICE CARD

FREE DELIVERY

POWER MACS

	PRICE	LEASE
Power Mac 9500/120 16/1GB/CD	3,399	111
Power Mac 8500/120 16/1GB/CD	3,799	95
Power Mac 7500/100 16/1GB/CD	2,759	71
Power Mac 7200/90 8/500/CD	1,630	44
Power Mac 7200/75 8/500/CD	1,249	41
Performa 5200/75 8/1GB/CD/FAX	1,849	51
Performa 6200/75 8/1GB/CD*	1,359	38

60 MONTHS LEASE!

PRINTERS & ACCESSORIES

	PRICE	LEASE
Laserwriter Color	5,500	139
Apple 20" Monitor	1,960	49
Apple 15" Monitor	470	6
Stylewriter 220 Color	389	10
Stylewriter 2400B	389	10
Laserwriter 4/600	860	22
Design Keyboard	80	2
Geoport	99	3
Apple CD 600 Ext	299	8

POWER BOOKS

PRICE

LEASE

CARTRIDGES

DRIVE

88MB

47

208

200MB

68

383

270MB

60

383

EZ 135MB

20

208

SCANNERS

PRICE

LEASE

CALL

SYSTEMS & PERIPHERALS



"Custom Configuration Specialists"

- Dealers & International sales welcome!
- Best Prices, Service & Delivery.

POWERMACS

PERFORMA

6100/66 8/350/CD/Demo	1145.	550 5/160/CD w/14"
7100/80 8/700/CD	1295.	575 5/160/CD w/14"
7100/80 AV 16/700/CD	1795.	578 8/250/CD
8100/100 8/700	2145.	635 5/250/CD w/15"
8100/100 16/700/CD	2645.	636 8/250/CD w/14"
8100/110 16/2GIG/CD	2895.	637 5/700/CD w/15"
7200/75 8/500/CD	1289.	638 8/350/CD w/15"
7200/90 16/500/CD	1695.	6115 8/350/CD/15"
7500/100 16/1GIG/CD	2595.	6200 8/1Gig/CD
8500/120 16/1GIG/CD	3485.	6300 16/1.2Gig/CD
8500/120 16/2GIG/CD	3895.	5215 8/1Gig/CD
9500/120 16/1GIG/CD	3295.	All Performa's include fax modem
9500/132 16/1GIG/CD	3595.	PowerMac 6100/66
9500/132 16/2GIG/CD	3875.	8/350CD \$ 1145.
9500/132 256/4GIG/CD	11,195.	Limited quantities available



775. 2289 Westwood Bl. LA, CA. 90064 Tel 310-470-9426 Fax 310-470-4956

995. One stop shopping for all your software & hardware needs!

800 • 589 • 1234

1045. 1175. 150 4/120 895. 5300CE 32/1Gig

1345. 520 2/40 1065. \$ 5395. PrecisionColor 8/1600PCI

1245. 520C 4/240 1695. POWERBOOK Thunder/30-1152

1345. 540C 4/320 CALL 520 4/240

1695. 190 8/500 1595. Thunder Color/30-1152

1739. 190CS 8/500 1875. Thunder Color/30-1600

5300s 8/500 Mono 1695. Thunder 24 GT

5300cs 8/500 2195. POWERBOOK VideoVision Studio 2.0

5300cs 16/750 275. VideoVision Studio Array

5300c 8/500 3085. TrueVision Targa 2000Pci

5300c 16/750 3445. \$ 895. Agfa Arcus II Plus

Most Complete Mail order Source!

PRINTERS

Stylewriter

1200 199. 2400 319.

P.Laserwriter 300 395.

Laserwriter 4/600 769.

Laserwriter 360 1145.

Laserwriter 16/600 2095.

Color Laser 12/600PS 5875.

GCC Elite-XL 808 2795.

CALL 1895.

PANASONIC S 295.

Laser.P.S. L.I. 300dpi

Same as Apple LaserWriter. 310

VIDEO CARDS

Stylewriter 1200 199.

Stylewriter 2400 319.

P.Laserwriter 300 395.

Laserwriter 4/600 769.

Laserwriter 360 1145.

Laserwriter 16/600 2095.

Color Laser 12/600PS 5875.

GCC Elite-XL 808 2795.

CALL 1895.

PANASONIC S 295.

Laser.P.S. L.I. 300dpi

Same as Apple LaserWriter. 310

CIRCLE 501 ON READER SERVICE CARD

DAYSTAR

TECHNOLOGIES

radius

HEWLETT

PACKARD

RASTEROPS

UMAX

Apple

QMS

RADIUS MONITORS

PrecisionColor 17 775.

PrecisionColor 21 1475.

PrecisionView 17 899.

PressView 17 SR 1899.

Intellicolor 20e 1595.

SuperMatch21TXL 1695.

PressView 21T 1895.

PressView 21SR 3095.

Adobe Photoshop 3.01 PM \$ 299

Aldus \$99.

Pagemaker 4.2

COMPUTER GRAPHIC & NETWORKING

We custom configure and test your system. Specializes in Pre-Press, Publishing, Digital Video products. Competitive Leasing Rates are Available

PowerMacs

Powerbooks

Upgrades

Parts

<> Lease >>

Memory

9500 132/80-4.GB	\$ 5735
9500 132/32-1GB	3870
9500 120/48-1GB	3850
8500 80-4GB	4780
8500 16-1GB-CD	3350
8500 132Mhz 48-4GB	CALL
7500 32-1G	2890
7500 48-4GB-CD	4580
7500 120 MHZ	CALL
7200 90/16-500	1695
Performa	CALL
Call for config. not listed	

Demo Powerbooks

5300c 32-750	\$ 4175
5300c 16-500	3250
5300c 36-750	CALL
5300cs 16/1GB	3190
520c 4-240	CALL

Same day Upgrade No down Time!!

L.B.Q840/950/800	Call/490
Q840/800 to 8500/120	1599
8100 to 9500/132MHz	1790
8100 to 8500/120MHz	1399
Quadra 950 to 9150	979
Q 610 / 660 to 6100	550
7100 / 80 to 7500 / 100	999
650 to 7200 / 90	790
PB 500 to 5300	CALL
All PowerBook Upgrade	CALL
Si-LCII-Q700 to Power PC CALL	
Call for Upgrades not listed	

L.B.7100/66/80 750/950

Si Ci Vx 125/185/195

Floppy 1.44/ Mouse 119/49

Call for Power Supplies & more

L.B.7100/66/80 750/950

5900 120MHz16-1GB 2980

8500 12/132/200 3650/3175

Q 800 / 840/950 1090/1290

Qcts 610/660 AV 520/Call

5300CS 32-1G 5299

5300CS 8-500 1899

SONY 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

RADIUS Intel 17

Inter 20e

Apple 15" Multi 729

Apple 20T Multi 1899

SONY Sony 17Se2 1089

Sony 17sl2 859

Sony 15el2 479

Sony 20SE1 1899

NEC XV17/XV1

<p

ASK ABOUT OUR BUSINESS LEASING

POWERMACS

9500/132	16/2G/CD	\$3569
9500/132	16/1G/CD w/ATI card	\$3350
9500/120	16/1G/CD	\$3190
8500/120	16/1G/CD	\$3389
7500/100	16/1G/CD	\$2395
7200/90	8/500/CD	\$1589
7200/75	8/500/CD	\$1229
8100	Custom Configurations	Call
7100	Custom Configurations	Call
6100/66-DOS	16/500/CD	\$1797

9500/132
16/1GB/CD

APPLE 1705 + KYBRD

\$4249

Performa
575

Refurbished
5/250/CD A
Built-in 14" Monitor & Kybrd

\$939

Performa
550

Refurbished
5/160/CD
Built-in 14" Monitor & Kybrd

\$649

Performa
400

Refurbished
4/80

\$299

ATTO

FAST/WIDE
SCSI-2,3 ACCELERATORS
UP TO 40MB/SEC

Express PCI SC	\$319
Express PCI MC	\$749
SiliconExpress IV	\$849
SiliconExpress II	\$519

UPGRADES

With ORIGINAL APPLE LOGIC BOARD & PARTS

Quadra 950, 900 to	
Workgroup 9150/120	\$1550
Quadra800*, 840AV & 8100s to	
8500/120/132	\$1550-1979
C610, Quadra610 or 660 to	
6100/60	\$695
Quadra650, C650 to	
7100/80	\$995
Powermac 8100/80 to	
8100/100/110	Call

ORIGINAL APPLE PARTS

9500 LOGIC BOARD	\$1239
8500 LOGIC BOARD	\$795
120Mhz 604 PROCESSOR CARD	\$795
1.44 Floppy Drive	\$125
8500 POWER SUPPLY	\$195
AV Card	\$430
(CD-Rom Drive (300-2x-SPEED))	\$95

Prices Subject to Change Without Notice • Call for Latest Prices

All Prices reflect 3% Cash Discount



INNOVATIVE COMPUTER & NETWORKING

PERIPHERALS

SyQuest EZ135	\$239
NEC 6X-Speed CD-ROM Ext.	\$497
SupraFax/Mod Express 28.8	\$187
BEST DATA 28.8 w/Voice Mail	\$197
AGFA StudioScan II	\$847
AGFA Arcus II w/Full Photo.	\$1897
PaperPort Vx By Visioneer	\$357

UPGRADE YOUR PB500 TO
POWERMAC 603 PROCESSOR

\$789 + \$40 LABOR

DEMOS

8500/120	16/1G/CD	\$3089
7200/75	8/500/CD	\$1089
Q950	8/500/CD	\$1345
Q800	8/230/CD	\$1289
Q840AV	8/230/CD	\$1589
Q650	8/230/CD	\$1390
Q610	Call	
IIci	4/80	\$395
IIfx	4/80	\$525

POWERBOOKS

5300c/100Mhz	16/750	\$3340
5300cs/100Mhz	8/500	\$2139
5300/100Mhz	8/500	\$1425
190cs	8/500	\$1790
150	8/240	\$925
540c	4/320-R	\$2395
520c	4/240	\$1697
520	4/160-R	\$995
DUO280c	12/320/M	Call

PERFORMAS

638	8/350/CD/15"Mon/Mod/KB	\$1329
6116	8/700/CD/Mod/14"Mon/KB	\$1467
5215	8/1G/CD/Mod/15"Mon/KB	\$1729
6200	8/1G/CD/Mod/15"Mon/KB	\$1625
6220	16/1G/CD/Mod/TV-Vi/KB	\$1789
6300	16/1G/CD/Mod/15"Mon/KB	\$2256

MONITORS

APPLE 15" Multiscan	\$349
SONY 15SF2	\$510
NEC XV15	\$490
APPLE 1705	\$729
APPLE 1710AV	\$925
SONY 17SF2	\$899
NEC XV17	\$799
SONY 20SF2	\$1799
NEC XE20	\$1699

PRINTERS

APPLE LW 4/600	\$795
APPLE LW PRO 810-R	\$1839
APPLE LW 16/600	Call
APPLE Color Printer 12/600	\$5890
APPLE LW 360	\$1089
APPLE StyleWriter 2400	\$299
APPLE StyleWriter 2200	Call
APPLE StyleWriter 1200	\$189
APPLE StyleWriter PRO-R	\$220
HP PRINTERS	CALL

GCC PRINTERS

XL 808	800dpi/8ppm/11x17	\$2829
XL 616	600dpi/16ppm/11x17	\$2439
XL 1208	1200dpi/8ppm/11x17	\$3819

(310)445-6600

FAX: (310)445-6611

FAX TOLL FREE FROM JAPAN: 00-31-114211

2045-B South Barrington Ave., LA, CA 90025

CIRCLE 439 ON READER SERVICE CARD



Catalog Reseller



Great Buys



PINNACLE
MICRO
Optical Apex
4.6GB #E739
As low as \$1599

Optical Tahoo 230 *499 #E7228
RCD 5040 *1189 #E7248

Adaptive Solutions. Adobe Charged
PowerShop PCI *1797 #V9244

ExpressPCI-MC \$729 ATTO

MultiChannel #A4519

ExpressStripe RAID LO *339 #A4517

ExpressPCI-SC PCI *293 #A4518

SiliconExpressVnibus *799 #A4515

AGFA

The complete picture.

Studio Scan ISI *839 #S8477

Arcus II *1799 #S8482

DuScan *4499 #S8477



radius

Radius PCI Cards

ThunderColor 30/1600 PCI *1899 #V9102

ThunderColor 30/1152 PCI *1499 #V9103

Thunder 30/1600 PCI *1159 #V9108

Radius Monitors

Precision View 17 *949 #M6606

PrecisionColor17 *999 #M6603

Press View 17SR *1909 #M6600

Press View 21SR *3049 #M6603

PrecisionView 21 *2159 #M6614

Multiview 21 *1739 #M6611

ATI XClaim GA PCI graphic board

Graphic accelerator for PowerMac,

supports resolutions up to 1600x1200

w/2MB VRAM *349 #V9165

w/4MB VRAM *459 #V9162

2 VRAM Upgrade *219 #V9159

GA

EA PCI Video Board & Monitor

RESEARCH

EAseycolor 1600/16 PCI Card *569 #V9177

EA 21" Monitor & Calibrator *2369 #M6646

MPEG(PC) *1799 #V4533

All Prices reflect a Cash Discount. Any other method is 2% to 4% higher. Prices are subject to change without notice. All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#. No Refunds on Labor or Freight Charges. We accept Visa, Mastercard, Discover & American Express. P.O.s are accepted from U.S. Govt, Schools & Corporations. Not responsible for typographical errors.

International Call: 818-708-6388

Customer Service & Technical Support Call: 818-708-6388

Fax: 818-708-6399

Address: 6924 CANBY AVE UNIT#104

RESEDA CA. 91335

Hours: Mon-Fri, 8AM to 6PM (Pacific)

MacMarket

1-800-905-3034

Fax: 818-708-6399
WE HAVE ALL THE PARTS FOR YOU TO
BUILD YOUR OWN COMPLETE SYSTEM

Macintosh Prices Slashed even more

Get your PowerBook 500 PowerPC Upgrades Here at MacMarket

PowerPC PowerBook 5300 Series 603e RISC
5300cs 100MHz 8/500 *2249 #A1130
5300cs 100MHz 16/750 *2799 #A1133
5300c 100MHz 8/500 *3169 #A1121
5300c 100MHz 16/750 *3599 #A1118
5300c 117MHz 32/1GB *5399 #A1115
Duo 2300c 100MHz 8/750 *3329 #A1106
Duo 2300c 100MHz 20/1GB/Express Modem *4279 #A1107

PowerBooks W/ Motorola 68LC040
190 68/33MHz 4MB RAM/500MBHD *1589 #A1112
190s 68/33MHz 8MB RAM/500MBHD *1939 #A1109

Call For Best Prices on PowerBooks 150, 520 & 520c

PowerMac 7500 100MHz • 601 RISC • PCI

16MB of RAM 1000MB Hard Drive Quad-Speed CD600i *2699 #A1181
16MB of RAM 500MB Hard Drive Quad-Speed CD600i *2549 #A1178

PowerMac 8500 120MHz • 604 RISC • PCI

16MB of RAM 1000MB Hard Drive Quad-Speed CD600i *3695 #A1314
16MB of RAM 2000MB Hard Drive Quad-Speed CD600i *4099 #A1317

Apple Printers

Personal LaserWriter 320 w/toner *569 #P3244

LaserWriter 16/600PS w/toner *2395 #P3250

Color LaserWriter12/600PS w/toner *6500 #P3405

LaserWriter 4/600PS w/toner *749 #P3256

Color StyleWriter 2400 w/cartridge *369 #P3259

Color StyleWriter 2200 w/cartridge *399 #P3282

StyleWriter 1200 w/cartridge *239 #P3265

WACOM ARTZ II 12x12 Tablets \$399 #T9506

ARTZ II 6 X 8 ...\$299 #T9500 Hard Drives

All drives are tested and come with the latest FWB HDT. All drives come with full factory warranty. We carry both Internal and External. External Drives come with SCSI Cable & Terminator. These are Internals. External add \$600.

Quantum INTERNALS

1080MB FireBall(12ms) *275 #H1111
2.2GB Capella(8.5ms) *679 #H1308
4.2GB GrandPrix(8.6ms) *959 #H1122

Seagate INTERNAL BARACUDA SERIES -7200 RPM

2.5GB *799 #H1243
2.5GB-Wide *859 #H1246
4.2GB *1222 #H1249
4.2GB-Wide *1274 #H1252
Elite 9 SERIES 9GB *2095 #H1255

PageMaker 6.0 \$549 #S1027

We Sell Software

CIRCLE 420 ON READER SERVICE CARD

PowerMac 7200 601 RISC • PCI

16MB of RAM 500MB Hard Drive Quad-Speed CD600i *1743 #A1187
8MB of RAM 500MB Hard Drive Quad-Speed CD600i *1365 #A1184

PowerMac 9500 132MHz • 604 RISC • PCI

16MB of RAM 2000MB Hard Drive Quad-Speed CD600i *3699 #A1214

16MB of RAM 1000MB Hard Drive Quad-Speed CD600i ATI PCI 2MB Graphics Card *3599 #A1229

PERFORMA

Performa 5215CD•75MHz•PowerPC*
603 w/FPU 8MB RAM • 1GB HD • 4X Apple CD • Apple 15" Monitor • Apple Design Keyboard & Mouse • 1.4MB SuperDrive • 14.4Fax/Modem w/ Speaker Phone & Answering Machine \$1799 #A1191

Performa 6200CD•75MHz•PowerPC*
603 w/FPU 8MB RAM • 1GB HD • 4X Apple CD • Apple 15" Monitor • Apple Extended Keyboard & Mouse • 1.4MB SuperDrive • 14.4Fax/Modem w/ Speaker Phone & Answering Machine \$1798 #A1190

Performa 6300CD•100MHz•PowerPC*
603 w/FPU 16MB RAM • 1GB HD • 4X Apple CD • Apple 15" Monitor • Apple Extended Keyboard & Mouse • 1.4MB SuperDrive • 28.8Fax/Modem w/ Speaker Phone & Answering Machine \$2555 #A1193

Apple Monitors

Apple Multiple Scan 15" *399 #M6558

Apple Multiple Scan 20" *1899 #M6564

Apple Vision 1710AV *1059 #M6567

Apple Multiple Scan 14" *339 #M6570

Apple Multiple Scan 1705 *759 #M6638

Apple Multiple Scan 1710 *929 #M6500

Apple Keyboards

Apple Design Keyboard *84 #K8100

Apple Extended II Keyboard *159 #K8103

Nikon ELECTRONIC IMAGING

CoolPrint Slide Printer *1559 #P3271

SuperCoolScan External *1949 #S8503

SupraFAXModem™

SupraExpress 14.4 Plus *99 #F8106

Fax/Modem 28.8 v.34 *229 #F8109

SupraExpress 28.8 Plus *154 #F8107

EPSON

Stylus Color II InkJet Printer *399 #P3294

Stylus Color ProXL Printer *1669 #P3291

ES-1200C Pro Scanner *1129 #P8533

Transparency unit *628 #P8537

HP HEWLETT PACKARD

660c 600X300, 3PPM *399 #P3223

5MP 600dpi, 6PPM *999 #P3232

4MV 600dpi, 11x17Tray *2649 #P2325

DesignJet 1600CM *1921 #P3410

SYQUEST

Each with a Cartridge

5.25" 200 MB Removable *469 #R6115

EZ135 135MB *1229 #R6124

SyJet 1.3GB *549 #R6125

CALL #R6125

Transparency Adapter for Vista *389 #S8527

INTERGRATED MICRO SOLUTIONS

Twin Turbo 128M (4MB) *529 #V9240

Vista S8 Pro+ *763 #S8509

PowerLook Pro+ *1829 #S8519

PowerLook II Pro M *2259 #S8520

PowerLook II Pro2 *2699 #S8520

Vista S6 LE+ *569 #S8506

Vista S12 LE+ *729 #S8564

Vista S8 LE+ *659 #S8511

Transparency Adapter for Vista *389 #S8527

MACMARKET IS MORE THAN JUST
ANOTHER MACINTOSH DEALER, TAKE A
LOOK AT OUR GREAT HARDWARE
SELECTION & OUR LOW LOW PRICES.

Compare & Save

Hot Prices on DIMMS

8MB • 64BIT • 168PIN *229 #M1628
16MB • 64BIT • 168PIN *449 #M1625
32MB • 64BIT • 168PIN *459 #M1595
64MB • 64BIT • 168PIN *929 #M1619

SIMMS
4MB • 32BIT • 72PIN 60NS *154 #M1601
8MB • 32BIT • 72PIN 60NS *229 #M1598
16MB • 32BIT • 72PIN 60NS *459 #M1595
32MB • 32BIT • 72PIN 60NS *929 #M1604

PowerBook Memory
5300 132MHz • 604 RISC • PCI *190
4MB #A3886 *150 #M1702 *150
8MB #A3887 *287 #M1703 *287
12MB #A3888 *455 #M1708 *455
16MB #A3889 *577 #M1708 *577

Newer TECHNOLOGY
8MB, 64BIT 70NS DIMMS *279 #M1448
16MB, 64BIT 70NS DIMMS *529 #M1451
32MB, 64BIT 70NS DIMMS *1039 #M1454
64MB, 64BIT 70NS DIMMS *2049 #M1457

PowerBook 500 Upgrades /603e/117MHz
500 PPC (CPU Only) *549 #M4542
500 PPC w/4MB RAM *719 #M4542
500 PPC w/8MB RAM *889 #M4544

TRUEVISION®
Targa 2000 *3999 #V2000

FWB Incorporated
PCI Technology JackHammer Accelerator *299 #A4417

DAYSTAR
100MHz PowerPro 601 *1159 #A4500
Quadra 610, 650, 700, 800, 950, Centris 610, 650
(610 needs an adapter)

100MHz Turbo 601 *1139 #A4509
II, IISI, IIIV, IIIIV and Performa 600

100MHz PowerCard 601 *919 #A4498
Performa, Quadra, LC475, LC575, 605, 630

GLOBAL VILLAGE COMMUNICATION
PowerPort PC Cards

Platinum 28.8 *319 #B1810
Platinum Pro 28.8, 10Base-T *479 #B1847

PowerPort Mercury for PB 500s *319 #B1814
TelePort Platinum *199 #M8120
TelePort Gold II *109 #M8123

Portrait
DISPLAY
The art of motion should be seen
*929 #M6597

MICROTEK
Better Images Through Innovation.
ScanMaker Series

III w/PhotoShop *1929 #S8444
Trans. Adapt. for III *129 #S8469

IIRH w/PhotoShop *719 #S8447
IIRH w/ColorIT, OmniPageDirect *547 #S8450

ScanMaker E3 *359 #S8460

INTERGRATED MICRO SOLUTIONS
Twin Turbo 128M (4MB) *529 #V9240

Vista S8 Pro+ *763 #S8509
PowerLook Pro+ *1829 #S8519

PowerLook II Pro M *2259 #S8520
PowerLook II Pro2 *2699 #S8520

Vista S6 LE+ *569 #S8506
Vista S12 LE+ *729 #S8564

Vista S8 LE+ *659 #S8511
Transparency Adapter for Vista *389 #S8527

Add a second keyboard, monitor and mouse up to 250 feet away from your Macintosh!

- Compatible with most Macintosh computers with detachable monitors
- Supports Macintosh Hi-Res video
- Macintosh mouse support standard at both local and remote workstations
- Switch selectable privacy mode
- No software required for operation



MAC COMPANION™

CYBEX™

Cybex Corporation
4912 Research Drive Huntsville AL 35805 USA
(205) 430-4000 (205) 430-4030 fax

Macintosh and Mac are trademarks of Apple Computer, Inc. Cybex and Companion are trademarks of Cybex Corporation.

Dealer Program Available

Made in USA

CIRCLE 433 ON READER SERVICE CARD

STOP SCSI Problems SCSIVue™ Active Terminator

Benefits:
• Improves SCSI Bus Performance
• Less Errors, More Reliable Data Transfer
• Diagnoses Problems • Analyzes Quality

Optional Remote Display

Features:
• Active Regulation • Fast 50 & Fast Wide 68
• Status Indicators • Gold Contacts

SCSIVue™ Gold Diagnostic Cables

Benefits:
• No Loss of Important Data
• Faster Performance
• Test Cable Integrity

From: \$39

Features:
• Diagnostic Indicators • Large Ferrite Filters
• Triple Shielding (Unique Design)
• Double Gold 20° Plated Connectors

• Extra Heavy 26 Gauge Wire • 40 Styles in Stock

SCSIVue™ Teflon Internal Cables

Benefits:
• Less Errors, Ultimate Performance
• Silver Wire Improves Signal Quality

From: \$39

Features:
• Perfect 90 Ohm Impedance Match • Custom in 1 Day
• Triple Pronged Connector With Gold contacts Silver Wire

SCSIVue™ 2-1 Active SCSI/Switch

Benefits:
• Share Devices Between 2 Computers
• Up to 14 Devices to 1 Computer

Features:
• 2-1 Active Digital Switch/Repeater
• Regenerates SCSI Signal for Long Runs

Granite The SCSI Solution Company
Ph: 510-471-6442 Fax 510-471-6267
3101 Whipple Rd. Union City, CA. 94587

CIRCLE 408 ON READER SERVICE CARD

CIRCLE 409 ON READER SERVICE CARD

CIRCLE 410 ON READER SERVICE CARD

CIRCLE 411 ON READER SERVICE CARD

CIRCLE 412 ON READER SERVICE CARD

CIRCLE 413 ON READER SERVICE CARD

CIRCLE 414 ON READER SERVICE CARD

CIRCLE 415 ON READER SERVICE CARD

CIRCLE 416 ON READER SERVICE CARD

CIRCLE 417 ON READER SERVICE CARD

CIRCLE 418 ON READER SERVICE CARD

CIRCLE 419 ON READER SERVICE CARD

CIRCLE 420 ON READER SERVICE CARD

CIRCLE 421 ON READER SERVICE CARD

CIRCLE 422 ON READER SERVICE CARD

CIRCLE 423 ON READER SERVICE CARD

CIRCLE 424 ON READER SERVICE CARD

CIRCLE 425 ON READER SERVICE CARD

CIRCLE 426 ON READER SERVICE CARD

CIRCLE 427 ON READER SERVICE CARD

CIRCLE 428 ON READER SERVICE CARD

CIRCLE 429 ON READER SERVICE CARD

CIRCLE 430 ON READER SERVICE CARD

CIRCLE 431 ON READER SERVICE CARD

CIRCLE 432 ON READER SERVICE CARD

CIRCLE 433 ON READER SERVICE CARD

CIRCLE 434 ON READER SERVICE CARD

CIRCLE 435 ON READER SERVICE CARD

CIRCLE 436 ON READER SERVICE CARD

CIRCLE 437 ON READER SERVICE CARD

CIRCLE 438 ON READER SERVICE CARD

CIRCLE 439 ON READER SERVICE CARD

CIRCLE 440 ON READER SERVICE CARD

CIRCLE 441 ON READER SERVICE CARD

CIRCLE 442 ON READER SERVICE CARD

CIRCLE 443 ON READER SERVICE CARD

CIRCLE 444 ON READER SERVICE CARD

CIRCLE 445 ON READER SERVICE CARD

CIRCLE 446 ON READER SERVICE CARD

CIRCLE 447 ON READER SERVICE CARD

CIRCLE 448 ON READER SERVICE CARD

CIRCLE 449 ON READER SERVICE CARD

CIRCLE 450 ON READER SERVICE CARD

CIRCLE 451 ON READER SERVICE CARD

CIRCLE 452 ON READER SERVICE CARD

CIRCLE 453 ON READER SERVICE CARD

CIRCLE 454 ON READER SERVICE CARD

CIRCLE 455 ON READER SERVICE CARD

CIRCLE 456 ON READER SERVICE CARD

CIRCLE 457 ON READER SERVICE CARD

CIRCLE 458 ON READER SERVICE CARD

CIRCLE 459 ON READER SERVICE CARD

CIRCLE 460 ON READER SERVICE CARD

CIRCLE 461 ON READER SERVICE CARD

CIRCLE 462 ON READER SERVICE CARD

CIRCLE 463 ON READER SERVICE CARD

CIRCLE 464 ON READER SERVICE CARD

CIRCLE 465 ON READER SERVICE CARD

CIRCLE 466 ON READER SERVICE CARD

CIRCLE 467 ON READER SERVICE CARD

CIRCLE 468 ON READER SERVICE CARD

CIRCLE 469 ON READER SERVICE CARD

CIRCLE 470 ON READER SERVICE CARD

CIRCLE 471 ON READER SERVICE CARD

CIRCLE 472 ON READER SERVICE CARD

CIRCLE 473 ON READER SERVICE CARD

CIRCLE 474 ON READER SERVICE CARD

CIRCLE 475 ON READER SERVICE CARD

CIRCLE 476 ON READER SERVICE CARD

CIRCLE 477 ON READER SERVICE CARD

CIRCLE 478 ON READER SERVICE CARD

CIRCLE 479 ON READER SERVICE CARD

CIRCLE 480 ON READER SERVICE CARD

CIRCLE 481 ON READER SERVICE CARD

CIRCLE 482 ON READER SERVICE CARD

CIRCLE 483 ON READER SERVICE CARD

CIRCLE 484 ON READER SERVICE CARD

CIRCLE 485 ON READER SERVICE CARD

CIRCLE 486 ON READER SERVICE CARD

CIRCLE 487 ON READER SERVICE CARD

CIRCLE 488 ON READER SERVICE CARD

CIRCLE 489 ON READER SERVICE CARD

CIRCLE 490 ON READER SERVICE CARD

CIRCLE 491 ON READER SERVICE CARD

CIRCLE 492 ON READER SERVICE CARD

CIRCLE 493 ON READER SERVICE CARD

CIRCLE 494 ON READER SERVICE CARD

CIRCLE 495 ON READER SERVICE CARD

CIRCLE 496 ON READER SERVICE CARD

CIRCLE 497 ON READER SERVICE CARD

CIRCLE 498 ON READER SERVICE CARD

CIRCLE 499 ON READER SERVICE CARD

CIRCLE 500 ON READER SERVICE CARD

CIRCLE 501 ON READER SERVICE CARD

CIRCLE 502 ON READER SERVICE CARD

CIRCLE 503 ON READER SERVICE CARD

CIRCLE 504 ON READER SERVICE CARD

CIRCLE 505 ON READER SERVICE CARD

CIRCLE 506 ON READER SERVICE CARD

CIRCLE 507 ON READER SERVICE CARD

CIRCLE 508 ON READER SERVICE CARD

CIRCLE 509 ON READER SERVICE CARD

CIRCLE 510 ON READER SERVICE CARD

CIRCLE 511 ON READER SERVICE CARD

CIRCLE 512 ON READER SERVICE CARD

CIRCLE 513 ON READER SERVICE CARD

CIRCLE 514 ON READER SERVICE CARD

CIRCLE 515 ON READER SERVICE CARD

CIRCLE 516 ON READER SERVICE CARD

CIRCLE 517 ON READER SERVICE CARD

CIRCLE 518 ON READER SERVICE CARD

CIRCLE 519 ON READER SERVICE CARD

CIRCLE 520 ON READER SERVICE CARD

CIRCLE 521 ON READER SERVICE CARD

CIRCLE 522 ON READER SERVICE CARD

CIRCLE 523 ON READER SERVICE CARD

CIRCLE 524 ON READER SERVICE CARD

CIRCLE 525 ON READER SERVICE CARD

CIRCLE 526 ON READER SERVICE CARD

CIRCLE 527 ON READER SERVICE CARD

CIRCLE 528 ON READER SERVICE CARD

CIRCLE 529 ON READER SERVICE CARD

CIRCLE 530 ON READER SERVICE CARD

CIRCLE 531 ON READER SERVICE CARD

CIRCLE 532 ON READER SERVICE CARD

CIRCLE 533 ON READER SERVICE CARD

CIRCLE 534 ON READER SERVICE CARD

CIRCLE 535 ON READER SERVICE CARD

CIRCLE 536 ON READER SERVICE CARD

CIRCLE 537 ON READER SERVICE CARD

CIRCLE 538 ON READER SERVICE CARD

CIRCLE 539 ON READER SERVICE CARD

CIRCLE 540 ON READER SERVICE CARD

CIRCLE 541 ON READER SERVICE CARD

CIRCLE 542 ON READER SERVICE CARD

CIRCLE 543 ON READER SERVICE CARD

CIRCLE 544 ON READER SERVICE CARD

CIRCLE 545 ON READER SERVICE CARD

CIRCLE 546 ON READER SERVICE CARD

CIRCLE 547 ON READER SERVICE CARD

CIRCLE 548 ON READER SERVICE CARD

CIRCLE 549 ON READER SERVICE CARD

CIRCLE 550 ON READER SERVICE CARD

CIRCLE 551 ON READER SERVICE CARD

CIRCLE 552 ON READER SERVICE CARD

CIRCLE 553 ON READER SERVICE CARD

CIRCLE 554 ON READER SERVICE CARD

CIRCLE 555 ON READER SERVICE CARD

CIRCLE 556 ON READER SERVICE CARD

CIRCLE 557 ON READER SERVICE CARD

CIRCLE 558 ON READER SERVICE CARD

CIRCLE 559 ON READER SERVICE CARD

CIRCLE 560 ON READER SERVICE CARD

CIRCLE 561 ON READER SERVICE CARD

CIRCLE 562 ON READER SERVICE CARD

CIRCLE 563 ON READER SERVICE CARD

CIRCLE 564 ON READER SERVICE CARD

CIRCLE 565 ON READER SERVICE CARD

CIRCLE 566 ON READER SERVICE CARD

CIRCLE 567 ON READER SERVICE CARD

CIRCLE 568 ON READER SERVICE CARD

CIRCLE 569 ON READER SERVICE CARD

CIRCLE 570 ON READER SERVICE CARD

CIRCLE 571 ON READER SERVICE CARD

CIRCLE 572 ON READER SERVICE CARD

CIRCLE 573 ON READER SERVICE CARD

CIRCLE 574 ON READER SERVICE CARD

CIRCLE 575 ON READER SERVICE CARD

CIRCLE 576 ON READER SERVICE CARD

CIRCLE 577 ON READER SERVICE CARD

CIRCLE 578 ON READER SERVICE CARD

CIRCLE 579 ON READER SERVICE CARD

CIRCLE 580 ON READER SERVICE CARD

CIRCLE 581 ON READER SERVICE CARD

CIRCLE 582 ON READER SERVICE CARD

CIRCLE 583 ON READER SERVICE CARD

CIRCLE 584 ON READER SERVICE CARD

CIRCLE 585 ON READER SERVICE CARD

CIRCLE 586 ON READER SERVICE CARD

CIRCLE 587 ON READER SERVICE CARD

CIRCLE 588 ON READER SERVICE CARD

CIRCLE 589 ON READER SERVICE CARD

CIRCLE 590 ON READER SERVICE CARD

CIRCLE 591 ON READER SERVICE CARD

CIRCLE 592 ON READER SERVICE CARD

CIRCLE 593 ON READER SERVICE CARD

CIRCLE 594 ON READER SERVICE CARD

CIRCLE 595 ON READER SERVICE CARD

CIRCLE 596 ON READER SERVICE CARD

CIRCLE 597 ON READER SERVICE CARD

CIRCLE 598 ON READER SERVICE CARD

CIRCLE 599 ON READER SERVICE CARD

CIRCLE 600 ON READER SERVICE CARD

CIRCLE 601 ON READER SERVICE CARD

CIRCLE 602 ON READER SERVICE CARD

CIRCLE 603 ON READER SERVICE CARD

CIRCLE 604 ON READER SERVICE CARD

CIRCLE 605 ON READER SERVICE CARD

CIRCLE 606 ON READER SERVICE CARD

CIRCLE 607 ON READER SERVICE CARD

CIRCLE 608 ON READER SERVICE CARD

CIRCLE 609 ON READER SERVICE CARD

CIRCLE 610 ON READER SERVICE CARD

CIRCLE 611 ON READER SERVICE CARD

CIRCLE 612 ON READER SERVICE CARD

CIRCLE 613 ON READER SERVICE CARD

CIRCLE 614 ON READER SERVICE CARD

CIRCLE 615 ON READER SERVICE CARD

CIRCLE 616 ON READER SERVICE CARD

CIRCLE 617 ON READER SERVICE CARD

CIRCLE 618 ON READER SERVICE CARD

CIRCLE 619 ON READER SERVICE CARD

CIRCLE 620 ON READER SERVICE CARD

CIRCLE 621 ON READER SERVICE CARD

CIRCLE 622 ON READER SERVICE CARD

CIRCLE 623 ON READER SERVICE CARD

CIRCLE 624 ON READER SERVICE CARD

CIRCLE 625 ON READER SERVICE CARD

CIRCLE 626 ON READER SERVICE CARD

CIRCLE 627 ON READER SERVICE CARD

CIRCLE 628 ON READER SERVICE CARD

CIRCLE 629 ON READER SERVICE CARD

CIRCLE 630 ON READER SERVICE CARD

CIRCLE 631 ON READER SERVICE CARD

CIRCLE 632 ON READER SERVICE CARD

CIRCLE 633 ON READER SERVICE CARD

CIRCLE 634 ON READER SERVICE CARD

CIRCLE 635 ON READER SERVICE CARD

SYSTEMS & PERIPHERALS



Apple Quantity Deals	
9500/132 16-2GB-CD Qty.	\$3195
9500/132 0-0 Qty.	\$2595
9500/120 16-1GB-CD Qty.	\$2795
9500/120 0-0 Qty.	\$2195
8500/120 16-2GB-CD Qty.	\$3395
PowerBook 150 4-240MB Qty.	\$765
PowerBook 520 4-240MB Qty.	\$945
PowerBook 520C/540C Qty.	CALL
117MHz PPC Prcssr. Upgrd. f/500's	\$495
PowerBook 5300c 16-750MB Qty.	\$3095
PowerBook 5300ce 32-1.1GB Qty.	\$4595
PowerBook 5300cs 8-500MB Qty.	\$1995
Qudra 950 8-500MB Qty.	\$1495
Performa 630 8-500-CD Qty.	\$795
Performa 5215/75 8-1GB-CD Qty	\$1475
Apple AV /Video/DOS Card	\$395/275/325
Apple CD 300e/600e	\$169/299
Apple 15" / 17" 1705 / 20"	\$349/665/1645
Apple LaserWriter Select 360	\$995
Apple StyleWriter 1200/2400	\$175/289

WACOM Graphics Tablets

ArtPad II 4x5	\$129	
ArtZ II 6x8	\$295	
ArtZ II 12x12	\$399	
ArtZ II 12x18	\$649	

Sales (818)787-3282



Export " 780-9457

All Prices Are Based on C.O.D.
Order & Subject To Change!

Trade in Exchange your old Mac for a new Power Mac
any old PowerBook to new 5300 series

We Distribute full product line of:

TOSHIBA



Call for
product &
price list

COMPAQ



Upgrade Your CPU

Workgroup 9150/120MHz	\$1750
Qudra 800+, 840AV & 8100s to 8500/120MHz	\$1450
Qudra 800+, or 840AV to 8100/100/110MHz	\$890/1200
C650, & Qudra 650 to 7100/80MHz	\$785
6100/66MHz, Power Mac 8100/80 to 9500/120MHz	CALL
Power Mac 8100/100 to 9500/132MHz	\$1595
Power Mac 8100/100 to 9500/132MHz	\$1345

* Add \$100 to the upgrade price

COMPU.D
International, Inc.

1-800-929-9333

CIRCLE 434 ON READER SERVICE CARD

WORLD MICRO 1-800-580-0177

Powermacs

7200/75 8/500CD	1450..	631CD 8/500	1498.
7200/90 8/500 CD	1596.	638CD 8/350 TV	1299.
7200/90 16/500CD	1720.	640CD DOS 12/500	1999.
7500/100 16/500CD	2535.	5215CD 8/1000	1795.
7500/100 16/1GIG CD	2810.	616CD 8/700	1680..
8500/120 16/1GIG CD	3746.	6300CD 8/1000	1750..
8500/120 16/2GIG CD	4229.	Powerbook 190/66 8/500	1750.
9500/120 16/1GIG CD	4301.	Powerbook 190/66CS 8/500	2100.
9500/132 16/1GIG CD/V	3750.	Powerbook 190/66CS 8/500	2100.
9500/132 16/2GIG CD	3850.	Printers	

Power PC Powerbooks

5300/100 8/500	1690.	Laser 4/600	844.
5300 CS/100 8/500	2307.	Laser 16/600 w/kit	1965.
5300 CS/100 16/750	2249.	Laser 12/600 w/kit	6100.
5300 C / 100 8/500	3130.	Stylewriter 2200	375.
5300 C / 100 16/750	3690.	Stylewriter 2400	382.
5300 CE/117 32/1.1GIG	5530.	Displays	

Memory

8Mb Dimm	245.	15" Multiscan	420.
16Mb Dimm	Call	1705 Display	695.
32Mb Dimm	Call	1710 Display	975.

Free Shipping Anywhere in the U.S.

World Micro Systems Inc. Miami, FL
(305)716-0177 (305) 716-0277 fax

Prices reflect a 3% discount and can change without notice

CIRCLE 416 ON READER SERVICE CARD



Software Specials

MS Office 4.2.1	\$395	Photoshop 3.04	\$469
MS Excel 5.0	\$195	Illustrator 5.0	\$295
MS Word 6.0.1	\$199	PageMaker 6.0	\$395
Wordperfect 3.1	\$225	Freehand 5.0	\$295
SoftWindows	\$249	QuarkXpress 3.3	\$645

HARD DRIVES Specials Bundled w/Drive 7 Software

Apple 2.5" 160/240MB Qty. 9+	\$69/99
Quantum FireBall 1.2 GB SCSI INT.	\$299
Quantum Atlas 4.3GB SCSI EXT	\$969
Toshiba PowerBook 540MB	\$199

Seagate DRIVES

2.4GB Barracuda ST12550W Wide Int./Ext.	\$595/749
4.3GB Barracuda ST15150N/Wide ST15150W	\$999/1199
9.0GB Elite ST410800N/External	\$1799/1999

Removable Storage

SyQuest 200/270 Ext. w/1 cartridge	\$449/449
Maxoptics Tahiti II 1.3GB Optical Int.	\$599
Pinnacle Micro Apex 4.6GB Optical Int.	\$1599

UMAX Scanners

UC630/840	\$310/399
UC1260	\$650
VistaS6/S12	\$449/799
Gemini	\$1399
PowerLook II Pro	\$2699

Internet Address:

74673.1503@COMPUSERVE.COM
FAX (818)787-5555/FAX Back 787-4548

Computer Revelations Inc.

1 800 275-9924 in NY 516 737-0800

POWERMAC

7200/75 8/500CD \$1449
7200/90 8/500CD \$1449
7500/100 16/500CD \$2899
8500/120/16/1GIGCD CALL
9500/132 16/1GIGCD CALL

PRINTERS

LWRADIUS 360 \$1149
LWR-4MP \$799
LWR-4P \$799
HP 1600 C/P/S CALL
HP 4MV \$2899
STYLEWRITER 2400 \$399

RADIUS / SONY

APPLE 1710AV \$1040
APPLE 1705 17SF \$899
PRECISION 17" PREVIEW, 21" CALL
THREE COLOR COLOR CPD 15SF \$485

RADIUS / NEC

NEC 17XV \$779
NEC 17XP CALL
NEC 21XE \$1899
PC24XP \$299

POWERBOOK

520/4/240 \$1199
190/8/500 \$1699
190CS/8/500 CALL
5300CS/100 CALL
5300C/100 CALL
5300CE/100 CALL

APPLE INTERNAL SUPERDRIVE

\$149 w/ Exchange

ALL APPLE PARTS & ACCESSORIES IN STOCK

PowerMac
9500's 8500's,
7500's, 7200's,
are here!

CALL US FOR ALL OF YOUR

LEASING NEEDS!

331E DANTE COURT
HOLBROOK NY 11741 FAX 516 737-0923

NEW & USED BOUGHT & SOLD

Ask about our EXTENDED WARRANTY



CIRCLE 474 ON READER SERVICE CARD

Power Macintosh


7200/75 8/500CD \$1379
 7200/90 8/500CD 1599
 7500/100 16/500CD 2319
 7500/100 16/1GBCD 2449
 7500/100 32/2GBCD 3199
 8500/120 16/1GBCD 3444
 8500/120 16/2GBCD 3859
 8500/120 48/4GBCD 5099
 9500/120 16/1GBCD CALL
 9500/132* 16/1GB/CD 3659
 9500/132 16/2GBCD CALL
 6100/66 8/500CD 1299
 6100/66 16/500DOS 1859
 7100/80 8/700CD 1399
 8100/100 16/700/CD 2549
 8100/110 16/2GBCD 3099

Perfoma

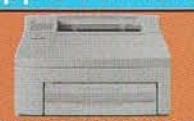
6116CD 8/700CD 1469
 5200CD 8/800/CD 1699
 5215CD 8/1GB/CD 1769
 6200CD 8/1GB/CD 1739
 6205CD 8/1GB/28.8 1849
 6218CD 16/1GBCD CALL
 6220CD 16/1GB/TV 1779
 6230CD 16/1GMPG2279
 6290CD 16/1.2GB14'CALL
 6300CD 16/1.2GBCD 2299
 QUICKTAKE 150 629
 APPLE MPEG CARD 249

WorkGroup Srvrs

ALL WG SERVERS AVAILABLE

PowerBook


190/66 8/500 \$1569
 190CS/66 8/500 1859
 5300 16/500 1679
 5300CS 8/500 2289
 5300CS 16/750 2719
 5300C 8/500 3039
 5300C 16/750 3499
 5300CE 32/1.1 5298

Apple Printers


StylWrtr 1200/2200 246/379
 StylWrtr 2400 299
 LsrWrtr 4/600PS 799
 LsrWrtr 12/600Ps 5899

FOURB TECHNOLOGIES
ORDER NOW AND SAVE
1-800-946-6221

International: 310.571.0506 Fax: 310.571.0510

iomega ZIP 100 \$187	hp 5 MP \$969	AppleCD 600e \$289
GLOBAL VILLAGE TELEPORT PLATINUM \$187	Performa 6300 \$2299	NEC XV21 \$1679

--	--	--

Apple Monitors

MitpIScan 14 329
MitpIScan 15 369
MitpIScan 1705 799
MitpIScan 1710 888
MitpIScan 1710AV 988
MitpIScan 20 1859

Gov't.Schools.Fortune 500 P.O.'s Welcome.FEDEX Next Day Avail.Visa,MC,AMAX accepted.Prices are Cash Discounted for COD.Cash/Cashier Check.

RADIUS

PrecisionCir 17	989
PrecisionView 21	2169
ThunderClr 30/1152	1545
ThunderClr 30/1600	1879
VideoVision Studio	2279

SONY

--

15SX 15" 428
15SF2 15" 479
17SF2 17" 839
17SE2T 17" 1600X1280 1079
20SF2 20" 1600X1280 1759
GDM-2000CT NEW! 3099

NEC

NEC XV 15/17 459/739
NEC XV 15+/17+ 479/789
XE 17/XP 17 989/1039
XE 21/XP 21 1679/1939

Global Village

Teleport Platinum 187
PwrPort Gold PC 168
PwrPort Platinum PC 319
PwrPort Platinum Pro 459

WACOM

ArtPad II 4X5 129
ArtZ II 6X8 293
ArtZ II 12X12 398
ArtZ II 12X18 685

AGFA

Arcus II	1889
StudioScan	579
StudioScan Iisi	899

Nikon

CoolScan LS-10E	1299
Super CI Scan 1000	1999
ScanTouch AX1200	1199

EPSON

ES-1000C	599
ES-1200C PRO-MAC	1149
Stylus Color II	448
Stylus Color	489
Stylus Color Pro	579

hp Hewlett Packard

DeskWriter 660	239
DeskWriter 660C	389
DeskJet 850C Mac	498
DeskJet 1600CM CALL	
LaserJet 5MP	969
LaserJet 4M+	1839
LaserJet 4MV	2689
LaserJet 5Si MX	3729
ScanJet 4C Mac	888

GCC

Elite XL608	2199
Elite XL616	2479
Elite XL808	2789
Elite XL1280 24MB	3889
Elite XL1280 Super Size	5519

CIRCLE 477 ON READER SERVICE CARD

CALL THE MAC EXPERTS!


The Reviews are in!

"Nice Price, Nice Image Quality, Nice Controls, — Nice Monitor!"

"Top Image-Quality Honors!"

PowerMax Trinitron™ Monitors

Model PM14T 25 mm dot pitch- up to 1280x1024 ... \$339!
Model PM15T 25 mm dot pitch- up to 1280x1024 ... \$489!
Model PM17T 25 mm dot pitch- up to 1280x1024 ... \$839!
Model PM17TE+ 25 mm dot pitch- up to 1600x1280 ... \$999!
Model PM20T 31 mm dot pitch- up to 1600x1280 ... \$1849!

We can also beat virtually any legitimate price on these lines!

- Agfa • DataProducts • Canon • DEC • Epson • Fargo • GCC • HP
- Kodak • Mag • Magnavox • Mitsubishi • NEC • Nikon • Radius
- RasterOps • Samsung • Seiko • Sharp • Sony • Umax • Xante

POWER MAX

Knowledge is Power


This Month's System Specials:

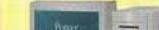
PowerMac 7200/90 with 16 Mb Ram, CD, 500 Meg Hard Drive, 17" Trinitron, Keyboard. Only \$2799, or just \$115 per month, complete with three year warranty!

PowerMac 9500/132 with 32 Mb Ram, CD, One Gig Hard Drive, 20" Trinitron, Keyboard. Only \$5799, or just \$183 per month, complete with three year warranty

Visa • MasterCard • Discover • Amex • COD • Leasing • P.O.s

PowerMax External Hard Drives


500 Meg External
Only \$179!



Call for pricing
on our complete
line of quality
hard drives!

Customizable Mac Systems

PowerMac 7200/75 8 Ram/CD	\$1299
PowerMac 7200/90 8 Ram/CD	\$1467
Perfoma 640CD Dos Compatible	\$1489
Perfoma 6116 8/700/CD/14"	\$1649
PowerMac 7100/80AV w/16 ram/CD	\$1789
New! Perfoma 6290CD 8/Gig/14"/Fax	\$Call
Perfoma 5215 8/Gig/CD/15"	\$1888
PowerMac 7500/100 16 Ram/CD	\$2498
PowerMac 9500/120 16 Ram/CD	\$3348
PowerMac 8500/120 16 Ram/CD	\$3498
PowerMac 9500/132 16 Ram/CD	\$3588
Powerbook 520C 4/240	\$1548
Powerbook 190 8/500	\$1698
PowerBook 5300 8/500	\$1798
Powerbook 190CS 8/500	\$1999
PowerBook 5300CS 8/500	\$2448
Powerbook 5300CS 16/750	\$2888
PowerBook 5300C 8/500	\$3248
PowerBook 5300C 16/750	\$3848
PowerBook 5300CE 32 Ram/Gig	\$5848

*No one stocks everything like we do!

Why Buy From PowerMax?

- Over 90% of our orders ship within 24 hours. We stock every major brand of Mac product from Adobe to Zoom!
- We speak plain English- no technobabble or high pressure.
- We consult with you, we want to make sure what you buy is what you need.
- Unlike most catalog outlets who try to keep prices low by limiting service options- we are a dealer who actually offers more expertise and service than most local full-priced dealers! We keep prices low through aggressive purchases, high volume and years of experience!
- All we ask is that you call a couple of the other guys first- then call us. You'll really appreciate our difference!

800-844-3599

Call today for your free PowerMax Catalog!
 Local line: (503) 624-1827 • Fax (503) 624-1635
 Find us on the World Wide Web at: [HTTP://WWW.Illuminatus.Com/PowerMax](http://WWW.Illuminatus.Com/PowerMax)
 Or send us E-Mail at: PowerMax@Illuminatus.com

CIRCLE 446 ON READER SERVICE CARD

VIDEO BOARDS

POWERBOARD
Nubus/PCI Accelerator
PowerShop
\$1925

radius

ThunderColor 8/1600 \$455
ThunderColor 30/1152 \$1555
ThunderColor 30/1600 \$1895

ATI XClaim GA PCI Card
2MB/4MBVRAM \$349/455

SCANNERS

AGFA
Arcus II Plus
\$1769
Studio Scan II si \$869
Studio Scan Trans. \$455

Nikon

Nikon CoolScan LS 10E \$1279
Nikon Super CoolScan \$1899

UMAX

U-MAX PowerLook Pro \$1799
U-MAX PowerLook II \$2869
U-MAX Mirage \$6895
U-MAX Vista S8pro+ \$869
U-MAX Vista S6 LE+ \$569
Polaroid Sprint Scan \$1599
Kodak RFS 3570 \$7995
Kodak RFS 2035 \$6495
Epson ES 1000C \$699
Epson ES 1200C Pro \$1099

PRINTERS

LW 12/600 Color \$5995
C.StyleWriter 2200 \$385
StyleWriter 2400 Color \$379
StyleWriter 1200 \$239
HP HEWLETT PACKARD
HP LaserWriter 4MV \$2695
HP LaserWriter 5MP \$999
HP DeskWriter 850C \$499

FARGO

Fargo Primera Pro \$1285
Fargo Pictura 310 \$3295

Wacom Art -Z II 6X8 \$295
Wacom Art -Z II 12X12 \$429
Wacom Art -Z II 12X18 \$659

MEDIA

Hewlett Packard 2GIG DAT \$835
Dynamo Optical 230MB \$495
SyQuest EZ 135 w/cart \$229
SyQuest EZ 135 Cartridge \$19
SyQuest 200MB w/cart \$469
SyQuest 270MB w/cart \$468
SyQuest 88c MB w/card \$349
iomega Zip 100MB \$199
iomega Zip Cartridge 5pak \$79.95
Pinnacle RCD 1000 \$1329
Pinnacle RCD 5020i \$call
Pinnacle Apex 4.6 GIG \$1499
Pinnacle Sierra 1.3 GB \$1749
MO 230MB Cart \$29
MO 1.3 GB Cart \$57
Verbatim CD 74min. \$9
Olympus Deltis 1.3 MO \$1499
Olympus Deltis 230 MB \$499



800-931-2001

GOVERNMENT & UNIVERSITY P.O.'S WELCOME.
International Orders Tel: 818-901-6250 Fax: 818-901-6260
Internet Address: 102431.2627@COMPUSENSE.COM
Bestellen Sie per Tel/Fax und genießen Sie den Vorteil des teiften U.S. \$88 Kurses.

9500/132 CD
144MB RAM
4 GIG HDD
ATI 4MB Card
Sony 20" SF II Mon.
Extended Keyboard
\$9999

9500/132 48/2GIG/CD/ATI 4MB \$5595
9500/132 80/4GIG/CD/ATI 4MB \$6895
9500/120 32/1GIG/CD/ATI 4MB \$4295
8500/120 48/2GIG/CD \$4795
8500/120 32/1GIG/CD \$3995
8500/120 80/4GIG/CD \$6195

8500/120/CD
64MB RAM
2 GIG HDD/2MB V-RAM
Apple 1710AV Mon.
Extended Keyboard

\$6695

7500/100 48/2GIG/CD \$3995
7500/100 16/1GIG/CD \$2649
7200/90 32/1GIG/CD \$2395
7200/75 24/1GIG/CD \$1695

7500/100 CD
32MB RAM/1GIG HDD
256K CACHE CARD
Apple 1710 Monitor
Extended Keyboard
\$4295

8100/110 48/2GIG/CD \$3995
8100/100 32/1GIG/CD \$2995
7100/80 16/1GIG/CD \$1829
6100/66 16/1GIG/CD \$1695

MEMORY

	CAPACITY	INT	EXT
8MB DIMM	160MB 2.5"	\$99	\$145
16MB DIMM	500MB	\$159	\$219
32MB DIMM	700MB	\$199	\$259
64MB DIMM	1GIG	\$269	\$319
4MB Simm 72pin	2GIG	\$695	\$789
8MB Simm 72pin	4GIG	\$995	\$1095
16MB Simm 72pin	9GIG	\$2065	\$2149
32MB Simm 72pin			

Due to publication time advertising prices may vary. All prices includes cash discount. All products carry one year minimum manufacturer's warranty on parts and labor. All returns must have an authorization number(RMA). Shipping and service fees are non-refundable. No Sales Tax outside of CA. Business hours are 8am to 5pm Mon-Sat.

CIRCLE 455 ON READER SERVICE CARD

POWER BOOKS

5300CE	32/1GIG	\$5395
5300c	16/750	\$3559
5300cs	16/500	\$2649
5300cs	24/750	\$3299

5300c/100	24MB RAM/750MB HD Global 28.8 FaxModem carrying Case	\$4249
-----------	--	--------

5300	8/500	\$1695
190cs	8/500	\$1695
190	4/500	\$1499

MONITORS

APPLE	15"	\$419
	1705	\$769
	1710	\$949
	1710AV	\$1049
	20"	\$1895

SONY

Sony 15" SF II Color	\$479
Sony 17" SF II Color	\$899
Sony 20" SF II Color	\$1895

radius

Precision View 17	\$969
Press View 17SR	\$1799
Precision View 21	\$2195

DIGITAL CAMERAS

Kodak DC50 Zomm Camera	Comes with three levels of image resolution, 3:1 zomm lens, PCMCIA-ATA comatable
------------------------	--

\$985

Kodak DC 40 Camera	\$795
--------------------	-------

DCS 420 Digital Camera	Sports 1.5 million pixel resolution, initial continuous burst rate of 5 images in 2.25 seconds
------------------------	--

\$9357

AGFA Action Cam Digital Camera	Fully digital 3CCD/1528x1146 16.5x12.4 mm/Shutter speed 1/2000 to 1/2 sec.
--------------------------------	--

\$8499

Apple QuickTake 150	\$649
CHINON ES-3000	\$795
CHINON 16MB Flash Card	
Conectix Quickcam	\$95

PERFORMAS

5215CD 8MB /1GIG	\$1789
6116 CD 8/700	\$1569

6300 CD/100	16/1.2 GB HD/Kybd 28.8 Fx/Mod- 15"Mon
-------------	---------------------------------------

\$2495

6200 CD 8/1GIG/	\$1795
6230CD16/1GIG	\$2489

7200/90 CD	16 Ram /700 HD 15" Color Mon/Kybd
------------	-----------------------------------

\$2795

7200/ 75 CD	24 Ram /1GIG HD 15" Color Mon/Kybd
-------------	------------------------------------

\$2195

LATEST

Mac S • A • L • E INTERNATIONAL

SPECIALS**PowerMac 7200**
(CPU only)75MHz 8/500/CD- \$1,399.00
90MHz 16/500/CD- \$1,799.00
Save \$50 with Monitor & Keyboard Purchase

- * H U G E S A V I N G S O N N E W *
- Personal LaserWriter NTR •
Logic Board **U P G R A D E**
With Trade-in - **ONLY \$99.00**

New MS Word/Excel Bundle - **\$79.00**
ONLY \$49.00 With Any CPUNew MS Works V2.00 - **\$15.00**
ONLY \$10.00 With Any CPU**StyleWriter 1200**
with Ink Cartridge & Cable
► \$199.00 ◀PwrMac 9500/120 16/1GB/CD \$3165.00
Performa 5215 8/1GB/CD \$1699.00
Apple StyleWriter 2200 \$350.00
PowerBook 140-180c Battery \$45.00Apple 15" MultiScan \$375.00
Apple 14" MultiScan \$325.00
NEC CD-Rom Ext. Drive (1X) \$35.00
Laser IIg Logic Bd(Upgrade) \$450.00Mac Ally Ext. Kbd. \$55.00
External Hard Drive Enclosure \$69.00
Apple PB Int. Data/Fax Modem \$25.00
Toner/Select 300,310,360 \$69.00

* N E W *

(Other Configurations Available)

* U S E D / * R E F U R B I S H E D *

D e s k t o p C P U ' s	
Mac Plus	No Kbd or Mouse \$99.00
Mac SE (800K)	1/0 \$199.00
Mac SE (FDHD)	1/0 \$299.00
• Mac II	4/0 \$199.00
• Mac II	4/40 \$225.00
• Mac IIcx	4/80 \$325.00
• Mac Iifx	4/80 \$525.00
• Add 8 Bit Video Card	\$50.00
Mac LC	2/40 \$299.00
Mac LC II	4/80 \$375.00
Mac IIISI	5/80 \$349.00
Mac IIISI	5/160 \$379.00
Mac IIci	4/80 \$395.00
Mac Iivx	4/80 \$549.00
Mac Portable	2/40 \$350.00
Pwr Mac 6100/60	8/350 \$925.00
Pwr Mac 7100/80	8/500 \$1179.00
Centris 610	4/230 \$575.00
Centris 650	4/230 \$699.00
Centris 660AV	8/230/CD \$999.00
Quadra 650	8/230 \$1199.00
Quadra 700	4/80 \$699.00
Quadra 800	8/500 \$1125.00
Quadra 950	16/500 \$1499.00
Performa 200	4/80 \$399.00
Performa 400	4/80 \$375.00
Performa 600	5/80/CD \$649.00

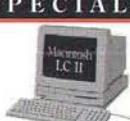
(Performa's Are CPU Only)

P o w e r B o o k s	
PB 100	4/40 \$499.00
PB 145	4/80 \$799.00
PB 145B	4/80 \$799.00
*PB 150	4/120 \$899.00
PB 160	4/80 \$949.00
PB 165	4/160 \$1029.00
PB 165C	4/80 \$1299.00
PB 180	4/120 \$1350.00
*PB 520	4/160 \$1099.00
Duo 210	4/80 \$599.00
Duo 230	4/80 \$749.00
Duo Dock	\$349.00
Duo Floppy Adapter	\$59.00
Duo Battery Recharger	\$45.00
PB Battery Recharger	\$35.00
PB Int. Fax/Data Mdm	\$25.00
PB 14.4 Express Mdm	\$79.00
PB AC Adapters	\$39.00

V i d e o	
Apple 8 Bit Video Cards	\$85.00
Apple 13" RGB Display	\$250.00
Apple 14" Color Display	\$350.00
*Apple 15" MultiScan	\$339.00
Apple 16" RGB Display	\$649.00
Apple 17" MultiScan	\$799.00
Apple 20" MultiScan	\$1299.00
Performa Display	\$179.00

P r i n t e r s / P e r i p h e r a l s	
** Personal Laser LS	\$279.00
LaserSelect 300	\$299.00
Stylewriter	\$129.00
Stylewriter II	\$159.00
Portable Stylewriter	\$199.00
ImageWriter II	\$199.00
I/W LocalTalk Card	\$59.00
Apple Color Printer	\$299.00
Apple OneScanner	\$249.00
(\$25 OFF w/CPU Purchase)	
Apple Color OneScanner	\$399.00
Apple Ext. SuperDrive (1.44)	\$149.00
Apple CD 300 Ext. Drive	\$199.00
Apple HDI-20 Ext. FloppyDrive	\$129.00
Apple 5.25" Drive(LC/Ile)	\$79.00
Apple Design Kbd	\$69.00
Apple Ext. II Kbd	\$95.00
Din 8 Cable (CPU to ImageWriter II)	\$5.00
Geoport Telecom Adapter	\$79.00
PowerBook Cordura Carrying Case	\$15.00
Apple PowerBook 4MB Ram (For Powerbook 140-180c)	\$85.00
1MB /80ns Simm (30 Pin)	\$15.00
Apple EtherNet & Network Cards - Call!!!	

* Denotes Factory Refurbished

Mac IIxi 5/80
Complete Color System
W/ Apple Color Monitor & Kbd.**\$599.00**Mac IIci 4/80
Complete Color System
W/ Apple Color Monitor & Kbd.**\$679.00**Mac LCII 4/80
Complete Color System
W/ Apple Color Monitor & Kbd.**\$579.00**APPLE POWER CD
3-in-1 Portable CD-ROM Drive
w/Remote Control
for: Mac CD-ROM, Photo CD
& Audio Compact Discs**\$149.00**We Now Feature A Huge Inventory Of Parts For All Apple Product And Also Offer Extended Warranties
Visit Our Web Site At: www.getnet.com/macsale Or E-Mail Us At: macsale@getnet.comLimited Quantities/Prices subject to change
Prices represent a Discount - off Full Price
Returns at discretion of Mgmt./15% Restocking fee**1-800-729-7031**1150 W. Alameda Dr., Ste. 1&2, Tempe, AZ 85282
(602) 858-0900 / (602) 858-9537 (Parts)**WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT**

CIRCLE 401 ON READER SERVICE CARD

Complete Computer Packages • Monitors • Memory • Storage • Peripherals • Printers, and More!

WE'RE YOUR COMPUTER SOURCE

NEC

MICROTEK

RasterOps

radius

MAX QMS

SMS

6100/66MHz 8/500	\$1247.00
6100 8/500 CD	\$1355.00
7100 8/700 CD	\$1715.00
7100 80MHz 8/500	\$1602.00
7100 80MHz 16/700 CD AV	\$1989.00
7200 75MHz 8/500 CD	\$1559.00
7200 90MHz 8/500 CD	\$1846.00
7500 100MHz 16/1GB CD	\$2769.00
8100 16/700 CD	\$2731.00
8100 100MHz 16/1GB CD AV	\$2957.00
8500 120MHz 16/1GB CD	\$3845.00
8500 120MHz 16/2GB CD	\$4209.00
9500 120MHz 16/1GB CD	\$4323.00
9500 132MHz 16/1GB CD	\$5048.00
Performa 638 8/350 CD 15" color & kb	\$1504.00
Performa 6200 8/1GB CD 15" color & kb	\$1504.00
Imagewriter II	\$398.00
Stylewriter 2400	\$400.00
Stylewriter II	\$177.00
Select 360 with toner	\$1335.00
Laserwriter 320	\$301.00
Laserwriter 4/600	\$880.00
HP DJ 850C	\$542.00
Star SJ 144 CLR	\$145.00
GCC Elite XL 1208	\$3990.00
GCC Elite XL 808	\$2849.00
GCC Elite XL 608	\$2290.00
HP Deskwriter 660 C	\$395.00
HP Deskwriter 560 C	\$334.00
HP LaserJet 5 MP	\$1019.00

Apple 14" Multiscan	\$333.00
Apple 15" Multiscan	\$422.00
Apple 17" Multiscan	\$925.00
Apple 20" Multiscan	\$1978.00
NEC XV17	\$780.00
SuperMatch 17XL	\$769.00
Viewsonic 17" GA (Multimedia)	\$882.00
Fax Modem: Power Book 520/540	\$324.00
Powerbook 190CS	\$2145.00
Powerbook 5300/8/500 monochrome	\$2140.00
Powerbook 5300CS 8/500 passive	\$2578.00
Powerbook 5300CS 16/750 passive	\$3247.00
Powerbook 5300C 16/750 active	\$4059.00
Apple EXT keyboard	\$156.00
Apple Keyboard	\$75.00
Apple Design Keyboard	\$73.00
MACALLY extended Keyboard	\$54.00
Microtek II scanner	\$371.00
Microtek 2SP scanner	\$468.00
UMAX UC 630 LE	\$376.00
V-RAM	\$85.00
V-RAM for Power Mac 1MB	\$404.00
V-RAM for 9500 2 MB	\$401.00
512 Level II Cache	
DIMMS	
8 MB	\$323.00
16 MB	\$565.00
32 MB	\$1156.00
64 MB	\$2151.00

SIMMS	
1 MB SIMMS 1x9	\$40.00
4 MB 72 Pin 1x32	\$137.00
8 MB 72 Pin 2x32	\$276.00
16 MB 72 Pin 8x32	\$511.00
32 MB 72 Pin 8x32	\$1048.00
16 MB for powerbook 5300	\$704.00
32 MB for powerbook 5300	\$1333.00
Smart UPS 400 VA	\$280.00
Newton 120 1 MB RAM	\$591.00
HARD DRIVES Quantum 3.5 Int.	
730 MB	\$184.00
840 MB	\$230.00
1080 MB	\$4300.00
2100 MB	\$1052.00
External kit	\$75.00

Sanyo 4X CD Int	\$192.00
Syquest EZ-Drive 135MB	\$242.00
Syquest 88MB External	\$322.00
Syquest 200MB External	\$472.00
Syquest 270MB External	\$451.00
Optical 230 External	\$515.00
Optical 1.3 GB External	\$1526.00

Computer Pros
1-800-319-4MAC (4622)
International Orders (305) 825-8709



HEWLETT PACKARD

FUJITSU

TEXAS INSTRUMENTS

Apple®

MPD
Micro Product Distributors

PowerMac's

7200/75 8/500 CD	1429.
7200/90 8/500 CD	1567.
7200/90 16/500 CD	1795.
7500/100 16/500 CD	2489.
7500/100 16/1GB CD	2766.
8500/120 16/1GB CD	3688.
8500/120 16/2GB CD	4149.
6100/66 8/500	1196.
6100/66 8/500 CD	1339.
7100/80 8/700 CD	1434.
7100/80AV 16/700 CD	2104.
8100/100 8/700	2009.
8100/100 16/1GB CD	2679.
8100/100AV 16/1GB CD	2870.
8100/110 16/2GB CD	3157.
9500/132 16/1GB CD	3799.
9500/132 16/2GB CD	3849.

Performa's

631CD 8/500	1330.
640CD DOS 12/500	1408.
5215CD 8/1000	1857.
6116CD 8/700	1578.
6220CD 16/1000 TV (*)	1857.
6205CD 8/1000	1949.
6200CD 8/100	1857.
6300CD 16/1000	2600.

(*) Display not included

PowerPC PowerBook's

5300/100 8/500	1690.
5300cs/100 8/500	2308.
5300cs/100 16/750	2769.
5300c/100 8/500	3139.
5300c/100 16/750	3693.
5300ce/117 32/1.1GB	5539.
Duo 2300c/100 8/750	Call
Duo 2300c/100 20/1.1GB	Call

PowerBook's

190/66 8/500	1596.
190cs/66 8/500	1878.

Printers / Keyboard's / CD's

SW 1200	.233.
Color SW 2400	.365.
Personal LW 320	.760.
LW Pro 16/600	1,999.
Apple CD600E	.298.

Free CD Software w/your CD purchase (while supplies last)

Displays

14" Multiple Scan	.332.
15" Multiple Scan	.395.
17" Multiple Scan	.935.
1705 Multiple Scan	.716.
Apple Vision 1710 AV	.1009.
20" Multiple Scan	.1878.

1 - 8 0 0 - 9 9 3 - 5 6 7 3

Your PowerMac Number One Source.

- 30 Day Money Back Guarantee (**)
- FREE FedEx 2nd Day Delivery on CPU's
- 48 Hours Turn-Around on Warranty Repairs
- School & Government PO's Welcome

Please call for Custom Configurations. Prices reflect 3% discount for CASH ONLY!
Prices subject to change without notice. (**) Certain conditions apply. All Major Credit Cards accepted. Int'l orders Welcome, Call (305) 477-4441 or Fax Us at (305) 477-4602.


Mac Components Engineered

 Int'l: 714-453-8278 Fax: 714-727-3713
 196 Technology Dr., Ste. K, Irvine, CA 92718

1-800-5000 MAC
HARD DRIVES
Quantum

	Seek	Wtr	Internal	External
Trailblazer 850	14ms	2yr	\$189	\$249
Fireball 1GB	12ms	3yr	\$259	\$319
Capella 2GB	8.5ms	5yr	\$649	\$709
Atlas 4GB	8.6ms	5yr	\$979	\$1039

Seagate

	Seek	Wtr	Internal	External
2.1GB Hawk 2LP	9ms	5yr	\$679	\$739
2.1GB B'cuda 2LP	8ms	5yr	\$799	\$859
4.3GB Hawk 4	9ms	5yr	\$985	\$1045
4.3GB B'cuda 4	8ms	5yr	\$1199	\$1259
2.1GB B'cuda 2LP-Wide	8ms	5yr	\$889	\$969
4.3GB B'cuda 4-Wide	8ms	5yr	\$1325	\$1405

NEC

	Seek	Wtr	Internal	External
730MB D3825	11ms	2yr	\$165	\$225
1.0GB D3827	11ms	2yr	\$245	\$305

SCSI ACCELERATORS

Atto Silicon Express IV	\$795
Atto Express PCI SC	\$325
FWB SCSI JackHammer	\$455
FWB PCI SCSI JackHammer	\$375
Custom RAID solutions available! Call for details.	

Prices drop frequently. Please call for latest pricing and availability. Corporate, Government and Education PO's welcome. Visa, MC, Amex and Discover accepted. System's prices reflect cash discount. Must call for RMA number before returning merchandise.

CIRCLE 491 ON READER SERVICE CARD

BUYERS

- ✓ Large selection of over 20,000 seller listings to choose from!
- ✓ All equipment is thoroughly tested, serviced, & cleaned.
- ✓ Buyers have a two-day escrow period to check equipment.
- ✓ Bonded, licensed, and insured, escrow agents


EXCHANGE
1-800-755-3033

Open 9-7 pm M-T ET

CIRCLE 478 ON READER SERVICE CARD

SELLERS

- ✓ No fee for listing equipment.
- ✓ Quick turn-around on payment.
- ✓ List and browse equipment for sale on our web page.
- ✓ <http://www.uce.com>
- ✓ Retrieve price indexes on fax info line.

770-955-0569

MacUSA
 Since 1983
800-809-0880
 Voice: 818-704-8923
 Fax: 818-704-9858

Dealer and International Orders Always Welcome!

We'll Beat Any Price!

 Reach us on the Internet: 1. macusa.com
 2. macusa@world.com
 3. <http://www.macusa.com>

 Free Shipping for All California Purchases.
 Visa, AmEx, & MasterCard Welcome.

 24422 Vanowen Street, Canoga Park
 California 91307, U.S.A.

PRICES REFLECT CASH DISCOUNT AND ARE SUBJECT TO CHANGE.

PowerMac

7200/75 8/500/CD	\$\$\$\$CALL\$\$\$\$
7200/90 8/500/CD	\$\$\$\$CALL\$\$\$\$
7200/90 16/500/CD	\$\$\$\$CALL\$\$\$\$
7500/100 16/500/CD	\$\$\$\$CALL\$\$\$\$
7500/100 16/1GB/CD	\$\$\$\$CALL\$\$\$\$
8500/120 16/1GB/CD	\$\$\$\$CALL\$\$\$\$
8500/120 16/2GB/CD	\$\$\$\$CALL\$\$\$\$
9500/120/16/1GB/4xCD	\$\$\$\$CALL\$\$\$\$
9500/136/16/2GB/4xCD/graphic card	\$\$\$\$CALL\$\$\$\$
Workgrp Srv 6150-66 16/700	\$\$\$\$CALL\$\$\$\$
Workgrp Srv 8150-110 16/1GB	\$\$\$\$CALL\$\$\$\$
Workgrp Srv 9150-120 16/2GB	\$\$\$\$CALL\$\$\$\$
6100-66 8/500/CD	\$\$\$\$CALL\$\$\$\$
6100-66 16/500/CD/DO	\$\$\$\$CALL\$\$\$\$
7100-80 8/700/CD	\$\$\$\$CALL\$\$\$\$
7100-80 16/700/CD/AV	\$\$\$\$CALL\$\$\$\$
8100-100 16/700/CD	\$\$\$\$CALL\$\$\$\$
8100-100 16/1GB/CD/AV	\$\$\$\$CALL\$\$\$\$
8100-110 16/2GB/CD	\$\$\$\$CALL\$\$\$\$

PowerBook

150/520	Call for Latest
190 8/500	Prices and
2300 8/750	Availabilty on
5300 mono 8/500	These Hot
5300 CS/100 8/500	Powerbooks!!
5300 CS/100 16/750	
5300 C/100 8/500	
5300 C/100 16/750	
5300 CE/117 32/1Gig	

Perfoma Bundle

631 8/500/CD	\$\$\$\$CALL\$\$\$\$
640 8/500/CD/VI/TV	\$\$\$\$CALL\$\$\$\$
640 8/500/CD/Bundle	\$\$\$\$CALL\$\$\$\$
521/57 8/1GB/CD Bundle	\$\$\$\$CALL\$\$\$\$
611/60 8/700/CD/Bundle	\$\$\$\$CALL\$\$\$\$
620/75 8/1GB/CD	\$\$\$\$CALL\$\$\$\$
620/75 8/1GB/28.8mod/Bundle	\$\$\$\$CALL\$\$\$\$
622/75 16/1GB/CD/VI/TV	\$\$\$\$CALL\$\$\$\$
6300/75 16/1GB/CD/Bundle	\$\$\$\$CALL\$\$\$\$

Printers

Apple	\$\$\$\$CALL\$\$\$\$
Hewlett Packard	\$\$\$\$CALL\$\$\$\$
Deskwriter/4M+/5MP/5SI	Epson, GCC, NEC, OkiData
Monitors	Apple, NEC, Radius, Sony, Viewsonic
Scanners	Agfa, Apple, Epson, Hewlett Packard, Microtek, Umax
Software Blowout!!!	MS Office V4.21 (Excel, Word, Powerpoint) \$525-\$195!!
MS Word 6/Excel 5/Powerpoint4	Only \$99 Each
Adobe Photoshop	\$275
Adobe Illustrator	\$275
Adobe Premier	\$295
Adobe Pagemaker	\$295
Micromedia Freehand	\$395

RECORDABLE CD

2X Includes 5 CD's

YAMAHA CD Recorders

CD-R BLANKS \$6.99

SYQUEST

OPTICAL BLOWOUT

FWB HAMMER 2X CD-R \$1449

MAXOPTIX T4 2.6 GB OPTICAL DRIVE \$1999

JAZ II 1GB Removable HD \$599

MEDIASTORE

NEVER UNDERSOLD!

CIRCLE 471 ON READER SERVICE CARD

FAST CASH

 For All Macs, Memory & Peripherals — Working or not

TOP DOLLAR PAID

Mac Traders (800)990-0995

 (310) 576-2466 Mon.-Fri. 9 AM-6 PM Sat. 10 AM-4 PM (P.S.T.) Fax: (310) 394-7323
 1511 Lincoln Blvd. (bet. Broadway & Colorado), Santa Monica CA. 90401

CIRCLE 448 ON READER SERVICE CARD



LA's LEADING COMPUTER STORE!

LA
COMPUTER CENTER

(800) 689-3933 ORDERS ONLY!

(310) 473-2535 FAX (310) 312-9041

NEW! e-mail us at: lacc@directnet.comINTERNATIONAL ORDERS WELCOME! WE WANT TO BUY YOUR NEW & USED APPLE PRODUCTS
Call for Quantity Pricing! UNIVERSITY, SCHOOLS, GOVT & FORTUNE 1000 P.O.'S ACCEPTED!

CLEARANCE SPECIAL!



STYLEWRITER
1200 \$199
2400 \$289

POWERMACS



7500 100MHz!
16/1GIG/CD
\$2599

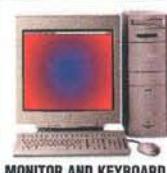
MONITOR AND KEYBOARD SOLD SEPARATELY.

7500/100 16/500/CD \$2449



8500 120MHz!
16/1GIG/CD
\$3499

MONITOR AND KEYBOARD SOLD SEPARATELY.



9500 132MHz!
16/1GIG/CD w/Video Card
\$3499

MONITOR AND KEYBOARD SOLD SEPARATELY.

APPLE WORKSTATIONS & SERVERS

9150 8/2GIG/CD (80MHz)	\$3299
8150 16/1GIG/CD/DAT (80MHz)	\$2599
8150 8/500/AS (80MHz)	\$2499
8150 16/1GIG/CD/DAT/AS/80mh	\$3099
95 32/2GIG/256K/DAT/AS/80mh	\$3399

QUADRA

6100/66	8/500/CD	\$1299
6100/66	16/500/CD/DOS	\$1999
7100/80	8/700	\$1249
7100/80	8/700/CD	\$1449
7100/80AV	16/700/CD	\$1899
8100/100	8/700	\$2099*
8100/100	16/1GIG/CD	\$2499*
8100/100AV	16/1GIG/CD	\$2799
8100/110	16/2GIG/CD	\$2899
7200/75	8/500/CD	\$1299
7200/90	16/500/CD	\$1649
8500/120	16/2GIG/CD	\$3899
9500/120	16/1GIG/CD	\$3199

Parts Trades Upgrades

*Call 318-424-9791



Teleport™ Bronze Faxmodem
with any upgrade!



Macintosh Logic Board Upgrades

Mac II to IIx with memory exchange	only \$449
Personal NT to NTR printer upgrade	exchange \$199
LaserWriter II INT/NTX to II	exchange \$499 NT/399 NTX
Centris 610 to Quadra 660AV	exchange \$399
Quadra 660AV to PowerMac 6100/60	exchange \$699
Quadra 800 to Quadra 840AV	exchange \$499
Quadra 800/840AV to PowerMac 8100/80	exchange \$999
IIvx to PowerMac 7100/80	exchange \$999
LC550 to LC575	exchange \$499
IIvx or IIci to Centris 650	exchange \$399
Classic to Classic II	exchange \$199
IIsi to Performa 630 cpu swap	exchange \$399



LC & LCII/LCIII to Quadra 605

*LC & LCII \$449/LCIII \$349

Macintosh CPUs

LCIII 4/0, no floppy or mouse NEW	\$249.
*LC550 4/160/CD	\$749.
LC580 8/500/CD	\$999.
Performa 575 5/250/CD NEW	\$999.
Performa 630 4/250/CD	\$699.
*Performa 6100/60 8/250/CD	\$1149.
Centris 650 4/0	\$799.
Quadra 605 4/160 NEW	\$649.
Quadra 660AV 4/0	\$749.
Quadra 840AV 0/0	\$1149.
Quadra 800 8/0	\$1149.
Quadra 950 8/500 NEW	\$1499.
PowerMac 6100/66 8/350/CD NEW	\$1299.
PowerMac 7100/80 8/500/CD NEW	\$1399.
PowerMac 8100/80 8/500 ...	\$1499.

Monitors

Apple 13" Trinitron	.....\$299.
*Apple 14" Performa Plus	.29 ..\$229.
*Apple 14" AudioVision	.....\$349.
*Apple 15" MultiScan	.....\$349.
Apple 16" Trinitron	.....\$699.
Apple Portrait Display REFURBISHED	.....\$329.
*Hewlett-Packard 17" with card	.....\$749.
*Hewlett-Packard 20" with card	.....\$999.
Radius PrecisionColor Pivot	.....\$549.
Radius TPD 19" mono	.....\$399.
Radius TPD 21" mono	.....\$549.
Radius PrecisionColor/20	.....\$1199.
Radius Color Display/21	.....\$1299.
RasterOps Sweet 16	.....\$599.
RasterOps GDM-1950 20"	.....\$849.

Video Cards

640 x 480

RasterOps 208 NEW\$119.

832x624

RasterOps 24Mx NEW\$199.

E-Machines DoubleColor LC\$149.

1024 x 768

E-Machines DoubleColor SX NEW\$149.

SuperMac Spectrum 24/Series IV NEW\$349.

RasterOps ClearVue/GS30 NEW\$299.

RasterOps PaintBoard Turbo NEW\$299.

1152 x 870

Apple 8•24\$229.

Apple 8•24GC NEW\$269.

Apple 4•8\$199.

PowerBook & Duo Display Adapters

E-Machines PowerLink Presentor-Duo\$349.

SuperMac SuperView-PowerBook\$299.

PowerMacintosh A/V Cards

\$499

Printers

*Apple StyleWriter 1200\$219.

*Apple Color StyleWriter 2400\$269.

*Apple Personal LaserWriter LS\$299.

Apple Personal LaserWriter 300\$319.

Apple Personal LaserWriter NT\$599.

Apple Personal LaserWriter NTR\$699.

Apple LaserWriter II INT\$699.

Apple LaserWriter II INTX\$899.

Apple LaserWriter Pro 810 NEW\$2699.

Apple Color Printer NEW\$699.

Hewlett-Packard DeskWriter C\$219.

Hewlett-Packard 550c\$249.

Laser toner cartridges sold separately

PowerBooks

PowerBook 520 4/240 25MHz 040\$1199.

PowerBook 520c 4/240 25MHz 040\$1599.

PowerBook 170 4/80\$999.

PowerBook 180 4/80\$1349.

PowerBook 160 4/80\$1149.

PowerBook 150 4/120\$899.

PowerBook 145 4/80\$999.

PowerBook 140 4/40\$849.

DuoDock Type 1\$399.

Duo 230 4/80\$899.

We Buy, Sell & Trade PowerBooks

Call Purchasing Department

(318) 424-9791

FAX (318) 424.9771

Customer Service (318) 424.9791

Purchasing & Information (318) 424.9791

Technical Support (318) 424.7987 or 7988

Prices reflect a 2% cash discount and are subject to change without notice. Products are refurbished unless indicated as "new".

Asterisk means factory refurbished.

To Place Your Order Call:
1•800•227•3971

1200 Marshall St. • Shreveport LA 71101



CIRCLE 425 ON READER SERVICE CARD

MACWORLD

April 1996

235

SHREVE Systems
Celebrating 15 years in business

BARGAIN BASEMENT

\$1399
NEW
monitor & keyboard
not included

PowerMacintosh 7100/80
8/500/CD

Make a trade-up!
Call Purchasing at 318-424-9791

Quadra 950 8/500

\$1499

Brand New!

1-Year Apple Warranty



ADB Mouse II
\$49
FREE mousepad

8MB DIMMS
\$239
8MB SIMMS
\$239



Replacement SuperDrives™

New \$149

Refurbished \$129

Available in
original and newer
"manual insert" styles



\$1149
new

Diskettes
\$25
CD-ROM \$35

11x17 Printing

Apple Color Printer

360 dpi

ColorSync™
\$699 NEW



Performa 578

The Family Macintosh

33MHz MC68LC040 processor

8MB RAM, 320MB hard drive

extended keyboard

double-speed CD-ROM

built-in speakers & microphone

fax-modem: 2400data, 9600 fax

PRE-INSTALLED SOFTWARE

• Macintosh System 7.5

• Claris Works

• Quicken 4

• Best of HomeWorks Templates

• ClickArt Performa Collection

• Macintosh PC Exchange

• At Ease

• Grolier Multimedia Encyclopedia

and lots more!

Power Systems & Supplies.


POWER MACS

Power Mac 9500 ¹³²	16/2GB/CD	3,599
Power Mac 9500 ¹²⁰	16/1GB/CD	3,299
Power Mac 8500 ¹²⁰	16/1GB/CD	3,599
Power Mac 7500 ¹⁰⁰	16/1GB/CD	2,649
Power Mac 7200 ⁹⁰	8/500/CD	1,549
Power Mac 7200 ⁷⁵	8/500/CD	1,199
Power Mac 8100 ¹⁰⁰	8/700/CD	2,299
Power Mac 8100 ¹⁰⁰	AV 8/700/CD	2,599

PERIPHERALS

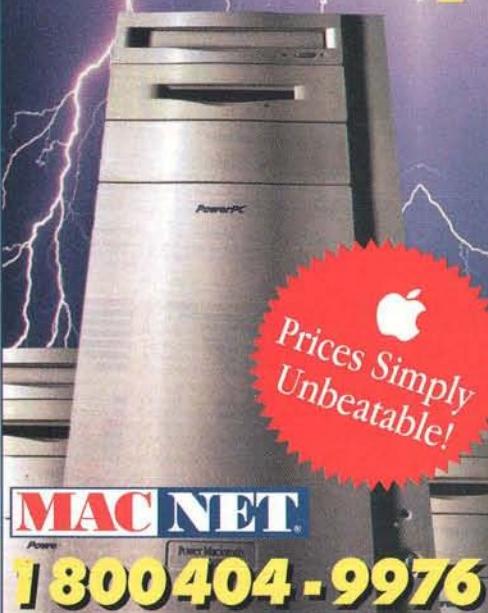
Laserwriter Color	5,399
Stylewriter 2200 Color	369
Laserwriter 4/600	799
CD ROM 600 External	299
Apple Monitor 14" NEW	319
Apple Monitor 15"	419
Apple Monitor 17" NEW	699
Apple Monitor 20"	1,849

SCANNERS

Microtek	CALL
Umax	CALL
Nikon	CALL

SyQuest ext.

CARTRIDGE	DRIVE
88MB	45
200MB	65
270MB	57
EZ 135MB	19
	199
	369
	369
	199

Prices, availability, and specifications are subject to change without notice. Prices reflect a cash discount.
(C.O.D.)

MAC NET
1800 404 - 9976
*Prices Simply
Unbeatable!*
NEW POWER BOOKS

Power Book 5300 ¹⁰⁰ 8/500	1,599
Power Book 5300 ¹⁰⁰ CS 8/500	2,399
Power Book 5300 ¹⁰⁰ C 16/750	3,599

PERFORMAS

Performa 5215 ⁷⁵ 8/1GB/CD/FAX	1,749
Performa 6200 ⁷⁵ 8/1GB/CD*	1,299

All products are fully warranted. Dealers inquiries welcome.
CIRCLE 543 ON READER SERVICE CARD
Ad #
496 c Internet Address:
74673.1503@COMPUSENSE.COM
FAX (818) 787-2111
FAX Back 787-4548
Specials

 Work Group Servers 8150
16-1GB CD, DAT, AppleShare

\$3995

Quadra 950 8-500 \$1595

CD ROM Multimedia Package Special

- ◆ Animals
- ◆ America Alive
- ◆ Sherlock Holmes
- ◆ Multimedia Encyclopedia 4.0
- ◆ World & US Atlas

\$49
Software

Microsoft Office 4.2.1	\$399
Microsoft Excel 5.0	\$199
Microsoft Word 6.0.1	\$199
WordPerfect 3.1	\$225
Adobe Photoshop 3.04	\$469
Adobe Illustrator 5.5	\$299
QuarkXPress 3.3 PPC	\$649
Adobe PageMaker 6.0a	\$399
SoftWindows for Power Mac	\$249
Other Software	CALL

radius Specials*

Precision Color Pivit	\$345
Precision Color 21"	\$1399
SuperMac 21" Color	\$795
SuperMac 21" TXL	\$1195
*Factory Reconditioned w/ 90 Day Warranty	


Power Macs

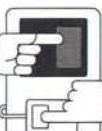
9500/132 32-4GB CD	\$4495
9500/132 16-2GB CD	\$3295
9500/120 16-1GB CD	\$2895
8500/120 16-2GB CD	\$3595
8500/120 16-1GB CD	\$3295
8100/100 16-700 CD	\$2395
7500/100 16-1GB CD	\$2345
7200/90 16-2GB CD	\$1995
7200/90 16-500 CD	\$1575
7200/75 16-2GB CD	\$1795
7200/75 8-500 CD	\$1175
6100/66 & 7100/66	CALL
All Custom Configurations	CALL

Printers
Monitors
Graphics Cards
Scanners
Modems
CD ROM Drives
PowerBooks
Peripherals
</

MacBYTE

SERVING MACUSERS SINCE 1989

LOW & HIGH END
CUSTOM SETUPS



CASH FOR MACS
TECH SUPPORT:
310.448.4488
FAX 310.448.4494

BUY • SELL • TRADE

800-432-2983

Open Monday-Saturday
4215 Glencoe Ave, 1st Floor
Marina Del Rey, CA 90292

CIRCLE 428 ON READER SERVICE CARD

Simmsaver Memory Solutions

PRINCETON memory for Mac, PowerPC, PowerBook.
Highest quality, best price/performance. Lifetime Guarantee!

DIMMSAVER/R is the reversible adapter that converts two
72-pin SIMMs into one 2M, 4M, 8M, 16M, 32M, 64M, 128M DIMM!

CLOCKSLIDER w/thermal fan allows user to
increase/decrease CPU performance via software

1-800-636-7281

Tel: (316) 264-2244 • Fax: (316) 264-4445 • http://WWW.globaltouch.com/st • Email: simmsave@globaltouch.com

CIRCLE 402 ON READER SERVICE CARD

MEMORY

LOWEST PRICES-BEST QUALITY

LIFETIME GUARANTEE

30 PIN SIMMs

1MB/2MB/4MB/8MB/16MB

72 PIN SIMMs

4MB/8MB/16MB/32MB

168 PIN DIMMs

4MB/8MB/16MB/32MB/64MB

ALL POWER BOOK's

2MB-36MB

1MB DIMM VIDEO RAM

9500/8500/7500 Series

2MB VIDEO UPGRADE

9500/8500/7500 Series

VIDEO RAM

256K/512K

POWER MAC CACHE

256K/512K/1024K

DIMM CACHE

256K/512K/1024K

MEMORY FOR ALL PRINTERS

FPU & PROCESSOR's

68040 Processor w/FPU 25MHz /33MHz

68882 FPU 25MHz /33MHz

DMS

Data Memory Systems Inc.

Salem, NH 03079 Tel: 603-898-7750 Fax: 603-898-6585

http://www.maxsol.com/dms

University, Government and Corporate P.O.'s with Approved Credit

1-800-662-7466

Memory Upgrade Specialists Since 1987

CIRCLE 447 ON READER SERVICE CARD

SYSTEMS & PERIPHERALS

UPGRADES & MEMORY



HAWKE
BUSINESS SYSTEMS

A Division of the CPS Service Group

Flemington, NJ 08822

We Buy, Sell, Trade & Repair Mac Equipment

(800) 875-2610

Fax - (908) 782-7027

Email - MacHawke@AOL.COM

Check Our Saturday Specials in AOL Mac Classified

Mac Se 4/40 - 800k - \$299.00
Mac Se 4/40 - 1.4Meg - \$375.00
Mac Classic 4/40 - \$399.00
Mac Classic II 4/80 - \$499.00
Mac Se/30 5/80 - \$599.00
Mac IISi 5/80 w/ FPU - \$449.00
Mac IICi 5/80 w/ Cache - \$549.00
Quadra 900 4/0 - \$1299.00

Exchange Upgrades

Mac Classic to Mac Classic II - \$199.00

Mac II to Mac IICx w/ FDHD - \$249.00

Mac II to Mac IIFx w/ FDHD - \$499.00

Mac IICx to Quadra 700 - \$549.00

Mac II Ci to Quadra 700 - \$499.00

CPU case included in Exchange

Other Combinations Available - Call for Details

Refurb 800 K Int Floppy Drives (w/t) - \$39.00

New 1.4 4 Meg Int Floppy (w/t) - \$125.00

Refurb 1.44 Meg Int Floppy (w/t) - \$89.00

Apple Portrait Monitor - \$199.00

Apple Hi Res Color Monitor - \$225.00

6 Month Parts & Labor Warranty
Package Pricing on All Systems

CIRCLE 457 ON READER SERVICE CARD

Memory Wanted

WE BUY NEW OR USED

SIMMIS

256K, 512K, 1MB, 2MB,
4MB, 8MB, 16MB, 32MB.

30 Pin, 64 Pin or 72 Pin.

POWERBOOK 2MB - 28MB

We Buy In Quantity. Call Us or Send Fax.

INNOVATIVE MICRO PRODUCTS, INC.
7631 Leesburg Pike, Suite A
Falls Church, Virginia 22043
Tel.: 703-848-0711 Fax: 703-848-0712

CIRCLE 462 ON READER SERVICE CARD

That Last A Lifetime...
... And Will Cost Less!

MEMORIES

SIMMS: 30-PIN, 72-PIN, 1-32MB

DIMMS: 168-PIN, 4-128MB

CACHE: 256K, 512K, L2

VRAM: 1MB, 2MB

POWERBOOKS & PRINTERS

COMTECH INTERNATIONAL

101 N. ROBERTSON BLVD., SUITE 200, BH, CA 90211

1.800.444.6969

Tel: 310.358.9090

Fax: 310.659.4542

CIRCLE 422 ON READER SERVICE CARD

WANTED: Used Memory

TOP \$\$\$ PAID

Guaranteed! We'll honestly try to beat ANY price!!

256K-64Mb ■ Any Quantity

We Buy Macs ■ Trade-Ins Welcome

DIMMS
Here Now!

New & Used SIMMs—CALL!

(800) 80-WE-BUY
MAC Solutions (310) 394-0001

1416 Wilshire Bl., Santa Monica, CA 90403 Fax (310) 394-7744

CIRCLE 473 ON READER SERVICE CARD



FREE → SHIPPING FOR YOUR FIRST ONLINE ORDER! (UP TO 10 lbs)

The LLB Company, Inc.

1-800-848-8967



International: 206.746.0229

WEB SITE: HTTP://LLB.COM

Fax: 206.746.5168

MODEMS

GLOBAL VILLAGE

Teleport Platinum 28.8 V.34	\$205
PowerPort 1XX Platinum 28.8 V.34	339
PowerPort Gold PC Card 14.4	180
PowerPort Platinum PC Card 28.8	349
PowerPort Platinum PRO PC Card	519
SUPRA Simple Internet 28.8 Ext.	\$189
SUPRA 28.8 V.34	229
SUPRA 28.8 FAX Modem	189
SUPRA EXPRESS 144 PLUS	99
SUPRA EXPRESS 288 External V.34	165

**iRobotics**

28.8 Sportster V.34 Internal Bundle	\$212
Sportster 14,400 Mac & Fax	119
28.8 V.34 PCMCIA Sportster	291

TDK

28.8 V.34 PCMCIA PB190/5300	\$259
-----------------------------	-------

Motorola

Lifestyle 28.8 V.34	\$212
Power 28.8 V.34	270
ISDN Bitsurfer	279

DRIVES



APPLE	850MB	339
1080MB	409	261G

QUANTUM

1000 Ext. Fireball	... \$345	850MB Ext. Trailblazer	... 279
Capella 2.2 GB	... 759	Grand Prix 4.2 GB 8.6 MS	1049



200MB SyQuest w/Cart	479
270MB SyQuest w/Cart	479



6X Multi-Spin CD-ROM Drive	... \$519
4XC 7D Changer	369

2X CD Recorder/Writer	... \$1485
4X CD Recorder/Writer	3035

SyQuest EZ135 W/Cartridge	224
Iomega Zip Drive	\$199



Jaz 1.0GB Drive	605
-----------------	-----

RCD1000 w/10 Recordable CDs	... \$1295
-----------------------------	------------

RCD5020 Ext. CD Recorder	1265
--------------------------	------

APEX 4.6GB Optical Drive	1589
--------------------------	------

ACCELERATORS



PowerPro 601 100MHz	\$1240
---------------------	--------

Turbo 040 40MHz w/cache	... \$679
Turbo 040i 33MHz w/cache	609

PowerPro 601 100MHz w/cache	1240
-----------------------------	------

Turbo 601 100 MHz w/adapter	1175
-----------------------------	------

PowerGard 601 100 MHz	959
-----------------------	-----



Quad Doubler 40MHz Centris610	235
-------------------------------	-----

Quad Doubler 40MHz w/FPU Centris 61 0	345
---------------------------------------	-----

Quad Doubler 50MHz w/FPU Quadra 610	390
-------------------------------------	-----

Quad Doubler 50MHz w/FPU Centris 650	390
--------------------------------------	-----

Quad Doubler 50 MHz Centris 660AV/7900	390
--	-----



Powerlook II
(includes Transparency Adapter)
\$2829

MEMORY

Standard 30-pin SIMMs

1MB 100/80/70NS \$31/32/35

2MB 80/70NS 65/74

4MB 80/70NS 114/135

8MB 70NS 270

16MB 70NS 455

1MB 70NS \$45

4MB 70NS 159

4MB PAL SIMMs for II, IIX

64-pin SIMMs for IIfx

1MB 80/70NS \$43/43

4MB 80/70NS 155/155

8MB 70NS 349

16MB 70NS 520

72-pin SIMMs

4MB 70/60NS \$101/112

8MB 70/60NS 196/209

16MB 70/60NS 415/448

32MB 70NS 859

4MB 70NS \$147

8MB 70NS 339

16MB 70NS 475

32MB 70NS 1221

4MB 70NS \$149/151

8MB 70NS \$138

16MB 70NS 442

32MB 70NS 895

64MB 70NS 1835

PB 5300 Series

4MB/12MB RAM \$292/469

16MB/32MB RAM 569/1159

PB 190 Series

12MB/16MB 70NS 507/599

32MB/70NS 1219

PBDUO 210/230 Series

4MB/8MB RAM \$155/293

16MB/MB RAM 567/1115

PB DUO-4MB/8MB \$169/299

PB DUO-12MB 479

PB DUO-14MB 549

PB DUO-20MB 698

PB DUO-28MB 1172

BMB 72PIN \$196

168-pin DIMMs

1MB VRAM PM72/75/8500 \$65

2MB VRAM PM 9500 229

256K Cache Dimm PMPC1256 176

512K Cache Dimm PMPC1512 299

168 Pin Dimms:

PowerMac 9500, 8500, 7500, 7200

168 Pin Dimms:

ACCELERATORS

MEMORY and CACHE Cards

DAYSTAR
DIGITAL

MicroMac Technology

**Newer**
TECHNOLOGY**XLR8**
INCORPORATED**Pacific MAC 1-800-622-6261**206-935-6100 • fax 206-935-7937
e-mail PACIFIKMAC@aol.com
<http://www.pacificmac.com>
MEMORY TRAPERS

BEST PRICES
GREAT SERVICE
LIFETIME GUARANTY

800-315-78071117 N. 19th St.
Suite 1201
Arlington, VA 22209703-243-4006
Fax 703-522-6626

CIRCLE 409 ON READER SERVICE CARD

DIMMs
SIMMs
SIMMs
CACHE
8mb \$235
16mb \$455
32mb \$91572 PIN
4mb \$105
8mb \$224
16mb \$38530 PIN
1mb \$25
2mb \$65
4mb \$115Model 256K 512K
61/71/81 \$105 \$230
72/75/85 \$225 \$325

All prices subject to change. Limited to stock on hand.

MAC Solutions 310-394-0001
(800)80-WE-BUY

Trade-Ins Welcome

CIRCLE 410 ON READER SERVICE CARD

Pally Ram


SIMMS

8MB \$219

16MB \$439

32MB \$879

DIMMS

8MB \$269

16MB \$499

32MB \$979

BRAND NEW RAM UPDATES

LOWEST PRICES ON THE CONTINENT
1-800-287-9612

CIRCLE 417 ON READER SERVICE CARD

**NEW! REVOLUTIONARY
MEMORY UPGRADE SOFTWARE**
FREE Trial

Try it on your Mac for 7 days. Download the free demo from <http://www.wp.com/jump>, CompuServe (Go CIS:MAC-14), or AOL (Utilities). Or, for only \$49, we'll mail you a disk.

To order in the US call

800-JUMP-MAC

Call 412-681-2692 outside US or for tech info.

"The Mac OS ought to work this way already. Until it does, there's OptiMem RAM Charger." **MacWorld**

"...offering much better ease of use, greater control over individual applications' memory parameters and an overall improvement in reliability." **MacWEEK**

"...memory errors occurred far less frequently ...had a stabilizing effect on the operating system." **Home Office Computing**

"...should be part of the system software." **MacWEEK**

"OptiMem RAM Charger is the steal of the year." **MacSense**

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL

MacSense

Home Office *****
***** of 4

Jump Development Group
1228 Malvern Ave., Pittsburgh, PA 15217
E-mail: JumpDevGrp@aol.com
<http://www.wp.com/jump>

Fax: 412-681-2163
Tech Questions & Sales: 412-681-2692
Recorded & Fax-back Info: 412-681-0544
US Sales: 800-JUMP-MAC (586-7622)

MacWorld
MW *****
MacWEEK

MAC HOME JOURNAL
*****<

PERIPHERAL

PERIPHERAL OUTLET, Inc.

800/259-6565

SAVE MONEY!
Peripheral Outlet will
buy your old memory
at great prices.

50 MHz Accelerator \$339

Speed increases of up to 400% with the DiiMOCache 50MHz 68030 Accelerator. The DiiMOCache outperforms not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. The DiiMOCache 50MHz runs on the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvi, IIsi, SE/30, and the Performa 600 and Performa 400 series. Call for adapter prices.

DiiMOCache 50MHz Accelerator \$339.00 DiiMOCache 50MHz w/FPU \$399.00



68040 Processor w/FPU \$229

For the Centris and Quadra 605, 610, 650 and 660AV, and the Performa 475/476 and LC 475. 33MHz for Quadra 650 and LC 575. 40MHz. CALL

CALL



PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 AppleLink-PERIPHERAL

Internet-sales@peripheral.com

HOURS: Monday-Thursday 6AM-7PM CST, Friday 6AM-6PM

We accept Visa/MC/Amex/Discover, and COD Cashiers check upon approval.
Educational, Government, and Fortune 500 P/Os accepted upon approval.

Due to volatility in the market all prices and availability are subject to change without notice.

PowerBook 5300/190 Memory

4 Megabyte upgrade	175.00
8 Megabyte upgrade	305.00
16 Megabyte upgrade	589.00
32 Megabyte upgrade	1197.00
40 Megabyte upgrade	CALL
48 Megabyte upgrade	CALL

168 pin DIMMs for PCI Macs

8 Megabyte	Prices Changing — Call for the Best Prices!
16 Megabyte	
32 Megabyte	
64 Megabyte	
128 Megabyte	

Prices Changing — Call for the Best Prices!

72 pin Memory for the Mac

4 Megabyte	80ns 70ns 60ns
8 Megabyte	Prices Changing — Call for the Best Prices!
16 MB-Non Composite	
32 MB-Non Composite	

Prices Changing — Call for the Best Prices!

Standard 30 pin SIMMs

1, 2, 4, 8, and 16 Megabyte SIMMs	
Prices Changing — Call for the Best Prices!	

68882 Math Coprocessors

68882 25 MHz FPU	49.00
68882 33 MHz FPU	59.00
68882 50 MHz FPU	99.00
25 MHz for Mac LC/LCII/Classic II	55.00
20 MHz w/2 slots for Mac IIxi	119.00

Newton Upgrade Products

Static RAM Storage Cards	
512K/1MB/2MB	89/124/235
Flash Storage Cards	
2MB/4MB	99/169
8MB/16MB	299/565

Miscellaneous

68040 processors with FPU	CALL
LaserWriter 320 2, 4, 6 MB upgrades	CALL
LaserWriter Pro 810 4MB/8MB upgrades	255/419
T.I. MicroLaser 1 MB	39.00
Mac Classic 1 MB Board	75.00
68851 16MHz PMMU	89.00
if requested, MODE 32 software included free w/PMMU	
Mac Portable 3-7 MB Cards	CALL

TOLL FREE TECH SUPPORT

Our installation instructions and tech support are the best in the industry!

LIFETIME WARRANTY on all memory products.

Order by 6:30 PM CST for same day shipping.

Overnight delivery from \$8.00!

*some restrictions apply

CIRCLE 454 ON READER SERVICE CARD



FAX your order!
206-746-5324

Mac Xtra Discounts

CALL FOR OUR FREE CATALOG!
1-800-553-4230



International:
206-746-3803

MEDIA

SYQUEST	
EZ135MB SYQUEST CARTRIDGE	\$19
EZ135MB SYQUEST CART. -10 PK.	\$180
44MB SYQUEST CARTRIDGE	40
88MB SYQUEST CARTRIDGE	45
105MB SYQUEST CARTRIDGE	52
200MB SYQUEST CARTRIDGE	73
270MB SYQUEST CARTRIDGE	56
VERBATIM	
3.5" 128MB OPTICAL	21
3.5" 230 MB OPTICAL	28
RECORDABLE CDROM 74MIN/640MB	8
RECORDABLE CDROM 74MIN/640MB-10 PK.	73
VERBATIM 25DD 3 1/2 10PK DISK	7.50
VERBATIM 4MM/60MB DATA CART	7
VERBATIM DATA 4MM DC 295 FT	9
VERBATIM DATA 8MM DC 367 FT	7
VERBATIM DC 212 120MB QIC80	12.50
VERBATIM EP-S HIGH YIELD TONER	60
VERBATIM EP-N TONER CART	89



MEMORY

What type of Memory do I need?

Standard 30-Pin SIMMs:

Plus SE, SE/30, Classic II/Color, LC/LCI, Perf. 200/400-430/600, Q900/950, Mac II, IIx, IIcx, IIxi, IIfx, IIvi, IIv.

Standard 72-Pin SIMMs:
Q605/630, 610, 650, 700, 800/840AV, LCIII/475/650, Perf 450-560/575 and 6115CD, PMac 617/1/8100, W5, W8, W560, WS95, WS6150 and W5/81/9150.

168 Pin DIMMs:

PowerMac 9500, 8500, 7500, 7200

As Low As

\$30!

STANDARD 30-PIN SIMMS	
1MB 100NS	\$30
1MB 80/70NS	31/33
2MB 80/70NS	65/73
4MB 80/70NS	112/133
8MB 70NS	320
16MB 70NS	585

30-PIN, 36 BIT PC SIMMS

1MB 70NS	\$42
4MB 70NS	155

4MB PAL SIMMS FOR II, IIX

4MB 80/70NS	\$138/140
64-pin SIMMs for IIfx	
1MB 80/70NS	\$38/39
4MB 80/70NS	152/154
8MB 70NS	319
16MB 70NS	653

72-PIN SIMMS

4MB 70/60NS	\$100/110
8MB 70/60NS	194/228
16MB 70/60NS	415/446
32MB 60NS	859

72-PIN, 36 BIT PC SIMMS

4MB 70NS	\$147
8MB 70NS	337
16MB 70NS	475
32MB 70NS	1220

168-PIN DIMMS

4MB 70NS	\$157
8MB 70NS	224
16MB 70NS	440
32MB 70NS	892
64MB 70NS	1832

PB 5300 SERIES

8MB RAM	290
16MB RAM	543
32MB RAM	569
64MB RAM	1157

PB 190 SERIES

4MB 70NS	\$207
8MB 70NS	304
12MB 70NS	507
16MB 70NS	599
32MB 70NS	1199

VERBATIM EP-L TONER CART.	
VERBATIM ANTI-GLARE FILTER 14/15"	59
ZIP 100 MB CARTRIDGE	19.50
ZIP 100 MB CARTRIDGE - 10 - PACK	139
ZIP 100 MB CARTRIDGE - 3 - PACK	45
IOMEGA JAZ	
JAZ 1GB CARTRIDGE	123
JAZ 1GB CARTRIDGE - 5 PACK	490
JAZ 500MB CARTRIDGE	69
JAZ 500MB CARTRIDGE - 5 PACK	294
TDK AUDIO PRODUCTS	
120 MIN. HIGH STANDARD	2.50
120 MIN. EXTRA HIGH	3.25
120 MIN. HI-FI GRADE	3.50
120 MIN. SUPER-VHS	6.90
30 MIN. EXTRA HIGH VHS-C	3.99
120 MIN. 8 MM HIGH STANDARD	4.25
120 MIN. 8 MM EXTRA HIGH	4.75
120 MIN. HI-8 METAL EVAPORATE	13.99
SONY BATTERIES	
D2 PACK	2.99
C2 PACK	2.99

AA 2 PACK	
120 MIN HIGH GRADE / 4 PK	5.90/20
120 MIN HI-8 METAL PART/4 PK	8.99/34
SONY VHS TAPES	
120 MINUTE	\$3.00
120 MINUTE 4 PACK	\$11
160 MINUTE	\$3.50
120 MINUTE SUPER	8.50
160 MINUTE SUPER	10
SONY CD-RECORDABLE	
RECORDABLE CDROM 74MIN/640MB	8
RECORDABLE CDROM 74MIN/640MB-10 PK.	73
SONY Beta Tapes (LIMITED AVAILABILITY)	
500 / 750 METER LGTH	3.50 / 3.50
750 METER LGTH HIGH GRADE	4.00
500 METER LGTH METAL	15.99
CABLES	
POWERBOARD TO HARD DRIVE CABLE	37
MODEM CABLE 6' PLUS/SE/IU	7
SCSI CABLE M50-50' 6' CABLE	19
SCSI M50-M50 18 CABLE	9
SCSI TERMINATOR	15

MODEMS

GLOBAL VILLAGE	
TELEPORT PLATINUM 28.8 V.34	\$203
POWERPORT 1XX PLATINUM 28.8 V.34	337
POWERPORT PLATINUM PC CARD 28.8	349
POWERPORT PLATINUM PC CARD PRO	519
US ROBOTICS	
US ROBOTICS 28.8 V.34 INTERNET BUNDLE	209
US ROBOTICS 14.4 EXT	117
ZOOM	
ZOOM 2400 BPS MODEM	65
ZOOM V.FAST 28.8	189
ZOOM VFX 14.4 V.32BIS S/R FAX	169
ZOOM VFX 14.4 V.32BIS W/VOICE	148
ZOOM 14.4 EXTERNAL S/R V.42	79
SUPRA	
SUPRAEXPRESS 28.8 EXT V.34	160
SUPRA 14.4 EXPRESS	98
SUPRA 28.8 PB FAX/MODEM	187
SUPRA 28.8 S/R FAX MODEM	222

Supra
Express 28.8 Plus
\$160!

PB500 SERIES	
4MB RAM	\$153
8MB RAM	291
16MB RAM	565
32MB RAM	1113
PDUO 210/230 SERIES	
PB DUO-4MB	\$165
PB DUO-8MB	297
PB DUO-12MB	473
PB DUO-14MB	543
PB DUO-20MB	777
PB DUO-28MB	1161
FPU'S/MATH COPROCESSOR/VRAM/CACHE	
CENTRIS FPU 25MHz	\$186
FPU 33MHz DUO/P600	51
FPU CO. CLASSIC 16MHz	42
LC575 33MHz MTH COPROC	233
POWERMAC 6100, 7100, 8100 VRAM/CACHE	
256K 80NS VIDEO RAM	\$17
512K VIDEO RAM	22
256K CACHE PIN 6100, 7100	105
512K CACHE PIN 6100, 7100	279
1MB CACHE PIN 6100, 7100	789
POWERMAC 72/75/85/9500 VRAM/CACHE	
1MB VRAM 7200/7500/8500	65
2MB VIDEO RAM PIM9500	227
256K CACHE DIMM	176
512K CACHE DIMM	299
POWERBOOK BATTERIES	
PB 100 BATTERY/CHARGER	44/111
PB 140-180C BATTERY	57

UPS Ground \$6 and up

Returns Subject to Approval & Restocking Fee

MAC Xtra 1075 Bellevue Way NE, Suite 114
Bellevue, WA 98004 - Phone (206) 746-3803

MONITORS/VIDEO

MONITORS	
SUPERMATCH PRESSVIEW 21T	\$3249
SUPERMATCH 21TXL	2245
RADIUS PRECISION VIEW 17"	1005
PRECISION COLOR PIVOT	875
PRECISIONCOLOR 17 RADIUS	1095
INTELLICOLOR 20E	2189
NEC MULTISYNC XC/14/15/17	349/479/839
NEC MULTISYNC XC/15/17/21	599/1099/1969
NEC MULTISYNC XP/17/21	1149/2379
VIDEOPHONES	
PRECISIONCOLOR PRO 24X NUBUS	1165
PRECISIONCOLOR PRO 24XX NUBUS	825
THUNDER IV GX-1360 RADUIS	1875
THUNDER IV GX-1152 RADUIS	1635
THUNDER IV GX-1600 RADUIS	2040
RADIUS THUNDER 24 GT	490
SPIGOT POWER AV	820

DRIVES

APPLE EXTERNAL DRIVES	
APPLE 850MB	339
APPLE 1.0GB	409
APPLE 2.0GB	925
QUANTUM DRIVES	
Q1080 EXTERNAL FIREBALL	345
Q540MB EXTERNAL FIREBALL	259
Q850MB EXTERNAL TRAILBLAZER	279
Q CAPELLA 2.0GB	759
Q GRAND PRIX 4.2GB 8.5MN	1049
SYQUEST	
SYQUEST EZ135 W/CARTRIDGE	225
EZ135MB CARTRIDGE	19.50
IOMEGA DRIVES	
ZIP 100MB ZIP CARTRIDGE	199/19
JAZ 1.0GB DRIVE/1.0GB CARTRIDGE	605/123
FWB	
2X CD RECORDER/WRITER	1475
4X CD RECORDER/WRITER	3015
NEC	
6XE MULTI-SPIN CD-ROM DRIVE	515
RUMI SYQUEST	
RUMI 88MB SYQUEST W/CART	369
RUMI 105MB SYQUEST W/CART	314
RUMI 200MB SYQUEST W/CART	479
RUMI 270MB SYQUEST W/CART	479

PINNACLE

APEX 4.6GB OPTICAL DRIVE	
RCD 1000 W/10 RECORDABLE CD'S	1295
RCD 5040	1250

RUMI 270MB \$479!

DRIVES

FIREWALLS	
DAYNA PORT CS-7 (10BASE-T)	\$79
DAYNA PORT CS-5 PAK (10BASE-T)	360
DAYNA MINI-HUB F-T	122
DAYNA PORT E/II - T NUBUS 10-T	105

NETWORKING

FARALLON	
ETHERWAVE NUBUS OR LC	184
ETHERWAVE AUI TRANSCEIVER	104
ETHERWAVE AAUI TRANSCEIVER	

UPGRADES & MEMORY

EDUCATIONAL & RECREATIONAL



Dynamic Engineering

PB & Duo Accel

PB500 FPU

Portable Upgrades

MEMORY, HDD, FAX, BATTERY

POWERBOOK 100 BATTERIES

435 Park Dr., Ben Lomond, Ca. 95005
Fax 408-336-3840

DSCVR VISA/MC AmEx
(408) 336-8891

CIRCLE 411 ON READER SERVICE CARD

MEMORY

GUARANTEED LOWEST PRICES

Memory for Desktops, Laptops,
Laser Printers from Apple to Zenith

WE BUY EXCESS MEMORY
1-800-808-6242

ERITECH INTERNATIONAL
818/244-6242 Fax 818/502-5059
740 N. Glendale Ave., Glendale, CA 91206

CIRCLE 469 ON READER SERVICE CARD

1x32	4MB	72 Pin	\$110
2x32	8MB	72 Pin	\$220
4x32	16MB	72 Pin	\$420
1x8	1MB	30 Pin	\$30
4x8	4MB	30 Pin	\$110
16x8	16MB	30 Pin	CALL
256K VRAM			CALL
512K VRAM			\$25
1MB VRAM			\$95
2MB VRAM (ATI)			CALL

COMPUTIX

3480 W. Warner Ave Ste. E, Santa Ana, CA
ORDER (800)516-3667

Tel: (714) 540-5131 Fax: (714) 540-5139

CIRCLE 419 ON READER SERVICE CARD

MUSIC for the MAC

We sell the full range of music products for the Mac.

Mac BEAT
Best prices and customer support in the business!

FREE CATALOG
Info: 505-473-3434
Fax: 505-473-4647

1-800-MAC-BEAT

CIRCLE 424 ON READER SERVICE CARD

BEST BUYS TO RUN YOUR MAC FASTER



Accelerate Your Mac II Series & LC/LC II to 68040 Speed

Sonnet Presto 040 80/40 MHz accelerators increase Mac IIci/IIsl series performance to 600%. Run an LC/LC II 2.5x as fast with the Presto 040 LC 50/25 MHz card. System 7.5 compatible. Use PDS slot.

w/FPU

Presto 040 LC, LC II	\$199	\$299
Presto Mac IIci, IIsl	\$299	\$399
Presto with 128K cache	\$399	\$499

*Adapter req'd.....\$49



Fastest Quadra Ever! Plug in a 100/50 MHz 68040 Board

Double speed with full compatibility. Works in Quadra/Centris 610, 650, 660AV, 700, 900. 80/40MHz unit for Centris 610.

80/40 MHz	\$249	w/FPU	\$349
100/50 MHz	\$249	w/FPU	\$399

Power Mac Cache!

	6100/7100 SIMM	7200/7500/8500 DIMM
256K	\$99	\$150
512K	\$238	\$255

A Fast 68030 Gives Your Older Mac New Life

Give your older Mac more muscle. All Sonnet Allegros come equipped with a speedy 68030. Some units also have an FPU, cache &/or additional SIMM slots.

25 MHz Classic	1x72pin SIMM slot.....\$199
33 MHz SE	4x30pin SIMM slots.....\$199
33 MHz Mac II	Supports RAM Doubler.....\$189
33 MHz Mac IIx	Plugs into CPU socket.....\$189
33 MHz LC II	Incl. FPU & 16K cache.....\$149
33 MHz Color Classic	Incl. FPU & 16K cache.....\$149
NuBus Adapter 660AV/Mac IIxi	\$99-\$149

If you use graphics, CAD, Excel, or rendering programs, you will speed through applications like never before.

25 MHz Q605, C/0610, C650, LC475, P47X	\$149*
33 MHz LC575, LC630, P57X, P63X	\$199*
33 MHz PB190, PB52X, PB54X, Duo 280	\$399
with LC040 exchange.	68882 upgrades from \$49.

SONNET TECHNOLOGIES, INC., 18004 Sky Park Circle
Irvine, California 92714, 714-261-2800 Fax 261-2461

Gov't./Corp./Education P.O.

E-Mail: Sales@sonnettech.com

800-786-6260

CIRCLE 463 ON READER SERVICE CARD

Practica Musica™ 3

Your personal music tutor now includes rhythm tapping, chord progressions, and many other exciting new features. More than ever the most complete music training package available. \$140

Kidmusic™

NEW! Fun music learning and entertainment for kids.

Tap keys to play with automatic accompaniment, play rounds, learn pitch and rhythm notation, write or record tunes. Expandable library of traditional songs. \$75



ARS NOVA • (206) 828-2711 • (800) 445-4866
FAX (206) 828-2132, http://www.ars-nova.com

Songworks™

Not only prints your song, but helps you write it! Suggests tune and harmony ideas, plays, prints melody, chord symbols, lyrics— with or without MIDI. Song files compatible with A Little Kidmusic and Practica Musica. \$125

Mac BEAT
Best prices and customer support in the business!

FREE CATALOG
Info: 505-473-3434
Fax: 505-473-4647

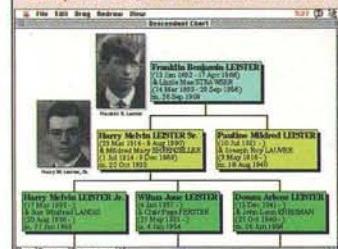
1-800-MAC-BEAT

CIRCLE 424 ON READER SERVICE CARD

REUNION®

the family tree software

Rated best by MacWorld, MacUser, Computer Life, and Mac Home Journal!



Reunion organizes your family information and images, creates large graphic tree charts — perfect for family gatherings! — prints family group sheets, questionnaires, indexes, calendars, family histories, custom reports and mailing lists. Reunion also links and displays pictures, shows how you're related to others, calculates life expectancies and the day of the week you were born, records sources, provides custom fields for imports and exports data, and much more. Free demo version on America Online and CompuServe. Call MacConnection to order: 1-800-334-4444

For a free brochure and sample printouts, contact:



Leister Productions

P.O. Box 289, Mechanicsburg, PA 17055

Phone 717-697-1378 Fax 717-697-4373

CompuServe 74774.1626 America Online LeisterPro

ONLINE BIBLE CD or Disk

FAST, POWERFUL, EASY TO USE

Deluxe CD.....\$90 NIV, NKJV, NRSV, plus all items on Classic CD

Classic CD.....\$40 KJV w/Strong's + 9 other versions • 20 Study Aids (Grk & Heb, Lexicon, X-Refs., Topics, Dict., Commentaries) • Text and Study Aids in other languages

"...the standard by which all others are judged." — MacHome JOURNAL 8/94

Ask About Our Other Products
FOR THE CHRISTIAN COMMUNITY

800-554-9116
603-927-4508
By The Numbers, Inc.

GRAPHIC ASTROLOGY

CALL FOR A FREE CATALOG

I-800-827-2240

TIME CYCLES RESEARCH

375 Willets Avenue Waterford, CT 06385 USA
(860) 444-6641 • Fax (860) 442-0625
E-Mail: TimeCycles@aol.com



Student - Teacher & School Discounts!



QuarkXPress 3.32
\$299



Freehand 5.5
\$189



**Authorware Pro
3.0** \$975



**Painter
4.0** \$229



**Kai's Power Tools
3.0** \$85

LATEST VERSIONS & FULL PACKAGES

Director Multimedia Studio

INCLUDES:

- Director 4.04 for Mac/Pmac
- Extreme 3-D
- Painter 4.0 for Mac/Pmac
- Sound Edit 16 2.0

\$1175

#1

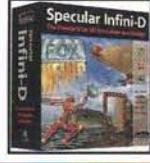
In Education!



MINICAD 6
\$319



Director 4.04
\$589



Infini-D 3.1
\$249



**Strata Studio Pro
1.7.5** \$495



**Wacom ArtZ II
6x8** \$285

4TH Dimension 3.5.....	\$499	Fractal Dabbler 2.0.....	\$49
Accura 144 & Fax 144.....	\$119	Fractal Poser 1.0.....	\$99
Action 1.0.....	\$99	Framemaker 5.0.1.....	\$399
Alias Sketch! 2.02.....	\$249	FaxPro 1.5.3.....	\$49
Alien Skin Texture Shop.....	\$49	Fileguard.....	\$119
American Heritage Dict Dlx.....	\$75	German Power Translator....	\$99
Archicad 4.5.5 Student.....	\$495	Hard Disk Toolkit 1.8.....	\$109
Artist in Residence.....	\$89	IdeaFisher Pro 6.0.....	\$75
Astound 2.0.....	\$119	Impact 2.0.....	\$65
Autocad 12.....	\$199	Inspiration 4.1.....	\$89
Blueprint 5.....	\$149	Instant Replay 1.0.....	\$75
Cameraman.....	\$49	IntelliHance 2.0.....	\$79
Canvas 3.5.2.....	\$149	Jag II.....	\$65
Chem Draw Pro 3.5.....	\$149	JMP 3.1.....	\$329
Chem Office Pro 3.1.....	\$299	KPT Bryce 1.0.....	\$85
Claris Draw 1.0.....	\$129	KPT Convolver 1.0.....	\$85
Claris Works 4.0.....	\$89	KPT Power Photos Vol 1 or 2	\$285
Clip Media II.....	\$139	KPT Vector Effects 1.0.....	\$85
Coda Finale 3.5.....	\$249	Live Picture 2.0.....	\$519
Code Warrior 8.....	\$129	Logomotion 2.0.....	\$75
Collage 2.0.1.....	\$149	Lotus 1-2-3 1.1.....	\$99
Conflict Catcher III 1.0.....	\$59	M.Y.O.B. 6.0.....	\$49
Cricket Draw III 2.01.....	\$79	M.Y.O.B. 6.0 With Payroll....	\$90
Cricket Graph III 1.5.3.....	\$79	MacAcad Tutorial Videos....	\$35
Datadesk 5.0.....	\$329	Mac Draft 4.2.....	\$199
Debabilizer Toolbox 1.6.5.....	\$219	Mac Project Pro 1.5.....	\$179
Deck II 2.5.....	\$199	MacLink Plus PC Connect....	\$129
DeltaGraph Pro 3.5.....	\$95	Master Trax Pro 6.0.....	\$79
Design Workshop 1.2.....	\$249	Mathcad 3.1.....	\$69
Digital Box Office Bundle....	\$449	Mathematica 2.2.2 Student.	\$149
Digital Chisel 2.0.....	\$99	Media Paint 1.1.....	\$249
Director Multimedia Studi...1.5	\$1175	Minitab Release 10XTRA....	\$199
DrawTools 1.0.....	\$79	M Power 2.5.....	\$149
DiskGuard.....	\$75	Nisus Writer 4.1.....	\$139
DrawingSlate II 12x12.....	\$219	Nisus Writer 4.1 W/LangKey	\$199
Elastic Reality 1.2.....	\$149	Now Bundle 3.5.....	\$69
Electric Image 2.5 Student.....	\$749	Now Utilities 5.0.1.....	\$59
Encore 4.0.4.....	\$249	Okidata OL410E/PS Printer.	\$765
Extreme 3-D.....	CALL	Omnipage Pro 5.0 Bundle..	\$209
Fast Track Schedule 4.0.....	\$139	PageTools 2.0.....	\$79
Filemaker Pro 3.0.....	\$129	Paint Alchemy 2.0.....	\$89
Final Draft 3.0.....	\$125	Passport Alchemy 3.0.....	\$279
Fontographer 4.1.....	\$169	Pixar Showplace 2.2.....	\$149
Form Z 2.7.5.....	CALL	Pixar Typewriter 2.1.1.....	\$135

Phototones Alphabets.....	\$129
Power FPU.....	\$75
Precision View 17" Monitor..	\$899
Quickeys 3.01.....	\$85
QX-Tools 1.0.....	\$79
Radius 8100/110MHZ 730 MB	\$2249
Ram Doubler 1.6.....	\$55
Ram Doubler/Speed Doubler	\$95
Ray Dream Designer 4.0.....	\$99
Ray Dream Studio 1.0.....	\$219
SigmaPlot 4.1.....	\$199
Sound Edit 16 2.0.....	\$189
Speed Doubler 1.1.....	\$55
Spigot Power AV.....	\$779
Story Board Artist 1.5.....	\$229
Strata Vision 3-D 4.0.....	\$179
Supercard 2.5.....	\$229
Soft PC 3.0.....	\$89
SoftWindows 2.0.....	\$249
Teleport Platinum 28.8.....	\$199
Terrazzo 1.5.....	\$89
Texturescape 2.0.....	\$85
The Black Box 2.0.....	\$75
Three X Five 2.0.....	\$59
TopDown Flowcharter 4.5.....	\$169
Trackman.....	\$75
Transjammer Vol 1 or 2.....	\$59
TurboCad 3-D.....	\$179
Up-Front 3-D 2.0.1.....	\$99
Vellum 3-D 2.7.....	\$595
Video Director 2.0.....	\$89
Video Fusion 1.6.1.....	\$229
Video Vision Studio 2.0.....	\$3599
VideoShop 3.0.....	\$199
Virex 5.6.....	\$60
Virtual Studio Suite.....	\$1095
VistaPro 3.0.....	\$75
Wacom Art Pad II 4x5.....	\$139
Wacom Art Pad II w/Dabbler	\$155
Wacom Art Z II 12x12.....	\$425
Walkthrough Pro 2.5.....	\$229
Word Perfect 3.5.....	CALL
XRES 1.2.1.....	\$269

NOW CARRYING
HARDWARE BY THE
FOLLOWING...

- *Calcomp - Drawing Tablets
- *Wacom - Drawing Tablets
- *Global Village - Modems
- *Logitech - Scanners & Mice
- *Hayes - Modems

*US Robotics - Modems

*Supra - Modems

*Radius - Monitors & Computers

*Okidata - Printers

*Sony - Monitors



See Us On
The Web!!

<http://iaswww.com/source.html>



CALL FOR
FREE CATALOG!!
(800) 289-3275

INCLUDES COMPLETE PRICE
LIST & FREE PRODUCT INF.

- **SAME DAY SHIPPING ON MOST ITEMS.
- **ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.
- **SCHOOL PURCHASE ORDERS WELCOME.
- **NO SURCHARGE ON CREDIT CARDS.
- **IBM & MAC PRODUCTS AVAILABLE.

WE WILL BEAT ANY ADVERTISED PRICE!!

1-800-289-3275



CIRCLE 423 ON READER SERVICE CARD



2517 Hwy. 35, Bldg. L
Manasquan, NJ 08736
(908) 528-0030
FAX (908) 528-9378
E-MAIL: SFTSWS@AOL.COM

EDUCATIONAL & RECREATIONAL



MIDI by Mail
1-800-638-4280
 CALL NOW FOR YOUR
FREE
CATALOG...
 AND GET A
FREE
 PASSPORT. **CD-ROM!**

SAVINGS UP TO
85% OFF!

- Hundreds Of Music Software Titles In Stock!
- Buying Power Of The Largest Music Retailer in The Country!
- Friendly Knowledgeable Staff!
- Overnight Delivery Available!
- Lowest Prices Guaranteed!

DON'T FORGET TO VISIT THE
 MOST COMPREHENSIVE MUSIC
 RELATED SITE ON THE WORLD
 WIDE WEB.....

<http://www.musician.com>



HUNDREDS OF DEALS LIKE... MUSICTIME PLUS

- Instantly Create Beautiful Sheet Music!
- Play Your PC Keyboard Like A Piano!
- Includes Over 40 Children's Songs Ready To Play & Print!

List \$199.00
\$29.99

PASSPORT.

SAVE \$170

CIRCLE 414 ON READER SERVICE CARD



QuarkXpress 3.32



AutoCAD Rel.12



Director 4.04



Authorware 3.0



Strata Studio Pro 1.75



Fractal Painter 4.0



Strata Vision 3D



Freehand 5.5



MinCAD +6

Student/Teacher/School
 Full Packages & Latest Versions

Academic Credentials Required

Desktop Publishing Bundle

QuarkXpress 3.3 or + any leading
 photo editing package + any leading
 illustration package \$699

'Only' limited to what we offer.

SOFTWARE
PLUS
Academic Inc.

Info (201) 288-7441
 Fax (201) 288-7442
 plusacadem@aol.com

80%
 SOFTWARE
 DISCOUNTS
 UP TO

377 Rt.17 South Suite #116
 Hasbrouck Heights, NJ 07604 •
 Web address: <http://tribeca.ios.com/~spai/index.html>

CIRCLE 538 ON READER SERVICE CARD

Bible Book Store On Disk
 Full Featured, Fast and Friendly
 Bible Study software. As the leader
 in Bible Study software since 1981
 we have continued to listen to our
 customers and provide them with the
 tools they need. We offer the
 most comprehensive line of Bible
 study tools available.

Call for FREE catalog.

Bible Research Systems
 2013 Wells Branch Pkwy #304
 Austin, TX 78728
 800/423-1228
 512/251-7541

NEW AMERICAN STANDARD

The most literally accurate Bible...
 ...in the English language

BIBLE MASTER™
 For Windows™ & Mac®
 Lockman Software

Ask about our new
BibleMaster Bundle
 for only \$69.95

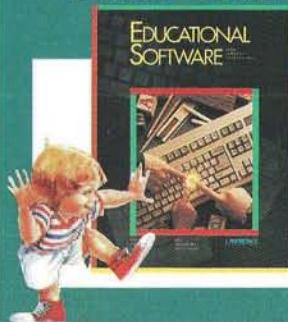
American Bible Sales
 870 S. ANAHEIM BLVD., ANAHEIM, CA 92805
1-800-535-5131

*The Standard of
 Biblical Excellence...*

NASB

CIRCLE 537 ON READER SERVICE CARD

FREE CHILDREN'S SOFTWARE CATALOG



Includes McGee®
 NO WORDS
 Software series!
1-800-421-4157

LAWRENCE
 PRODUCTIONS



CIRCLE 438 ON READER SERVICE CARD



United CD ROM

THE LARGEST SELECTION

1-800-864-8334

Pax Imperia 2
by Davidson & Assoc.
Control every aspect of a civilization on the verge of entering the vast frontier of space. Create & maintain your galactic empire. \$44
44438

Shivers
by Sierra On-Line
You must spend a night inside a mysterious museum. Beware, for evil spirits are on the loose...and they're looking for you. \$36
43174

Allied General
by Mindscape
Choose to be an American, British or Russian General & battle the German army. Even bigger & better than Panzer General! \$41
45189

Entomorph
by Mindscape
You are stranded on a bizarre tropical island, where everyone is mutating into giant insects. You must get to the bottom of this! \$33
47496

PBA Bowling
by Bethesda Softworks
Get your ball & rack up the pins! Realistic bowling competition is now for the Mac. You'll think it's Friday night at the local lanes. \$27
45534

Links Pro
by Access
A true golfing experience. Features Harbour Town Golf Links, Banff Springs Resort course and many more! \$38
44575

Ultimate Doom
by GT Interactive
Full version of Doom plus a brand new Episode Four. Catch the fever and get your copy of the hottest game going. \$36
47006

Doom II
by GT Interactive
Filled with more gruesome & vicious bad guys & more devious level designs than the original. \$45
40769

Terminator Future Shock
by Bethesda Softworks
Based on the box office smash hit, "The Terminator." Future Shock pits you against a horde of 3D animated robots. \$43
45537

Havoc
by Reality Bytes
Command a Battlecycle, Hypertank or Hovercraft. Blast, jump or throttle past network opponents or challenge yourself. \$35
45854

Gabriel Knight 2
by Sierra On-Line
Intrigue, mystery and fate prevail in The Beast Within. Gabriel continues as a detective of the supernatural. \$51
45640

5 Ft. MacPak
by Sirius Publishing
Essential for every Macintosh user. It's a great selection of games, personal productivity tools and educational CD-ROMs. \$27
36218

Casino Tournament of Champions
by Intracorp
Casino action with modem & network support. Choose the game, table limits & number of decks. \$35
41284

Mad Dog McCree II
by IBM
This action packed adventure will challenge your shooting skills by confronting banditos and Mad Dog's men. \$36
41071

Ripper
by Take 2 Interactive
Jack's back! In 2060, a vicious serial killer stalks the mean streets of New York and vanishes. Track him down! \$45
45331

Dungeon Master II
by Interplay
A gaming experience that will challenge you like nothing before. Amazing creatures and characters. \$35
40435

A-10 Attack
by Parsoft
Modern day warfare in the world's toughest, ugliest, airborne assault vehicle...The A-10 Warthog. \$44
46543

All Major Credit Cards

Accepted
ORDER AS LATE AS MIDNIGHT! SAME DAY SHIPPING**
Hours M-F 8 am - 12 midnight • Sat. 8 am - 5 pm • Sun. 12 Noon - 5 pm
(All times listed are CST)
** Orders received as late as 11 p.m. (CST) for 2nd day air.
Call for other deadline times. Special offers, item availability
and prices may vary according to format and are subject to
change without notice. \$ While supplies last. All prices in U.S. dollars.

FAX ORDERS: 1-217-352-9749

International Orders CALL

1-217-352-8737

Discovery Animals
by Discovery Channel
The most comprehensive and authoritative reference on animals in motion. \$30
42299

Outpost Cuba
by Parsoft
Adds new scenarios and missions to A-10 Attack. This new world is set in Cuba/Guantanamo Bay. \$30
46544

1-800-UNITED4

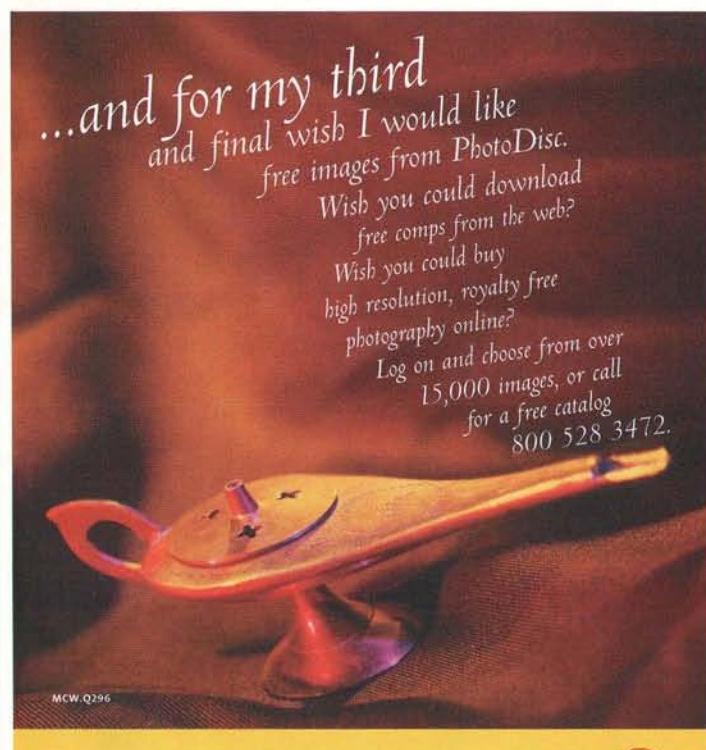
Braindead 13
by Readysoft
A bizarre comedy-horror-action-adventure game. Stop Dr. Neurosis' master plan... World Domination! \$36
39607

OVER 800 TITLES AT CD ADULT
1-800-CDADULT
1-800-232-3858

CODE 007
BBS:
1-217-352-9654
CompuServe:
76043,1605
America On-Line:
UNITEDCD INFO
via Fax back at
1-217-352-8123

CIRCLE 487 ON READER SERVICE CARD

EDUCATIONAL & RECREATIONAL GRAPHICS



<http://www.photodisc.com>

PHOTODISC®

CIRCLE 519 ON READER SERVICE CARD

ON THE LOOKOUT FOR MEDICAL CLIP ART?

Super Anatomy 4 & 5 Collections Just Released!

Full color electronic graphics depicting the human body and all its systems in exquisite detail. Compatible with any software application.

• Macintosh or Windows
• CDs or 3 1/2" Disks

RATED 5 OUT OF 5
Medical Software Review

For A FREE Image Catalog Call:
800-LIFEART
(800) 543-3278
(216) 291-1922
Fax (216) 382-1915

TechPool Cleveland, OH

CIRCLE 415 ON READER SERVICE CARD

MAP Art MAPS FOR GRAPHIC DESIGN

FULLY EDITABLE WITH ILLUSTRATOR, FREEHAND & OTHER PROGRAMS!

World Maps
Continents
Major Countries with States & Provinces
US States with Interstates, State Highways, 3 Digit Zip Areas & Counties!
Visit us at Macworld Expo Booth #345
CARTESIA
5 S. Main St., Box 757
Lambertville, NJ 08530
Voice 609-397-1611
24 hr. FAX 609-397-5724

ALL FOR FREE CATALOG
800 334-4291

Fine Artwork Macworld 1992

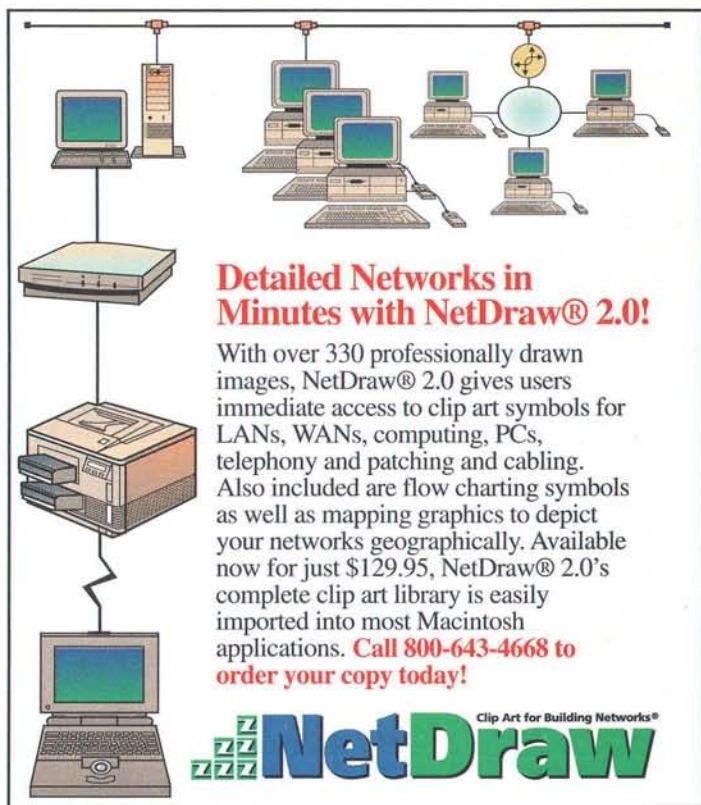
CIRCLE 499 ON READER SERVICE CARD

REAL world educationSM

FULLSAIL

digital media film & video audio +1 800 226 7625

CIRCLE 413 ON READER SERVICE CARD



Active Buyers turn to the

Macworld SHOPPER

Over 590,000 Macworld subscribers turn to the Macworld Shopper monthly. 531,250 of these buyers have taken action as a result of seeing an ad in the Macworld Shopper.

Macworld Shopper Purchase Study, 1996

Käblit™ Security

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

- Secure computer or Powerbook™ to desk, table, etc.
- Protect data
- Lifetime warranty

MacKäblit™ II - list \$49.95



Fixed Location

Käblit™ T-Lock - list \$39.95



Any Location

Quick And Easy To Install
Travels With Your Powerbook™

Padlock Security
Provided by
Master® Lock



Secure-It

Order now — Call 800-451-7592...

18 Maple Court, East Longmeadow, MA 01028, USA phone 413-525-7039

The particular Master® Lock Trademarks used are trademarks of the Master® Lock Company and are used by Secure-It, Inc. under license.

CIRCLE 412 ON READER SERVICE CARD

MAC REPAIR & UPGRADE

800-622-7977

24 HOUR SERVICE TURNAROUND
LONGER WARRANTY
FREE DIAGNOSTICS
COMPETITIVE PRICE

- Specialize in component repairs
- Power Mac
- Power Book
- Logic boards
- Advance Exchanges



Phone: 408-720-9899
Fax: 408-720-9459
720 East Evelyn Ave.
Sunnyvale, CA 94086
<http://www.dttservice.com>

DT & T MACINTOSH SERVICES, INC.

CIRCLE 504 ON READER SERVICE CARD

**STOP Throwing Away
TONER
Cartridges**

Recycle & Save Up To 70%
Better Print Quality
Free Pick-Up & Delivery

**National Toner
Recycling & Supply, Inc.**

(800)676-0749

(203)853-2998

Fax (203)853-1258

CIRCLE 429 ON READER SERVICE CARD

Data Recovery and Assistance: **800 440-1904**



400 BEL MARIN KEYS BL., NOVATO, CA 94949, PHONE: 415-883-4232, FAX: 415-883-0780

CIRCLE 510 ON READER SERVICE CARD

Since 1989, We've Put More Lives Back Together Than Oprah, Donahue, and Dr. Ruth Combined.

They aren't just documents and files. They're your life. And that's the way we treat them when you come to us for data recovery. Since 1989, we've restored information that has helped McDonnell Douglas fly high, kept Mobil Oil in the black, and allowed Johns Hopkins University to stay on the cutting edge of medicine. We can do the same for you, too. Quickly, efficiently, and painlessly. So, the next time you experience data loss, give us a call. We'll help you make the most of a bad situation.

800-743-0594

TOTAL RECALL

THE DATA RECOVERY COMPANY™

[www://usa.net/totrecall](http://usa.net/totrecall) Phone 719-380-1616 Fax 719-380-7022

CIRCLE 458 ON READER SERVICE CARD

Start your own custom Online Service!



- Internet E-mail
 - Multi-user Chat
 - Fastest file transfers available
 - Mac and Windows client software
 - Supports Modems, ISDN and TCP-IP
 - Unlimited user license
- Call 714-453-8095 for a FREE Demo Disk and more information.

TeleFinder bbs

Spider Island Software
One Venture, Ste. 230, Irvine, CA 92718 USA
BBS: 714.453.8190 Fax: 714.453.8044
info@spiderisland.com
<http://www.spiderisland.com>

CIRCLE 489 ON READER SERVICE CARD

SLIDES

From PC & Mac files	\$3.75
4x5 chromes/negs	\$30
Dye sub print/overhead	\$18
Hi Res Scanning	\$10

Call for special pricing on Quantity
Duplication of Slides & Overheads

Show & Tell 39 W38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD

NEXTWAVE

SERVICE BUREAU

35mm SLIDES & DUPES

4X5's & SCANS

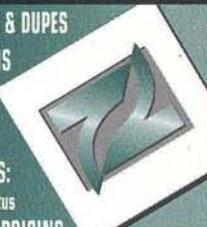
PC & MAC

OVERHEADS

COLOR PRINTS:

Fiery, Iris, Cactus

COMPETITIVE PRICING



In new York 212/989 2727
elsewhere 800/445 9002
bbs 212/989 3290

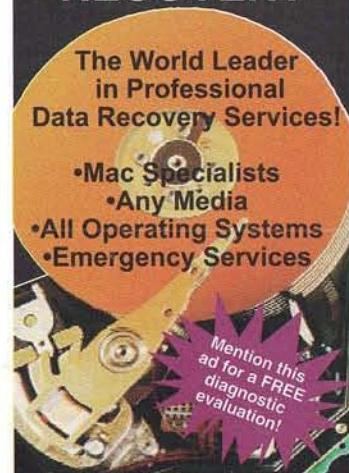
AMERICAN EXPRESS • VISA • MASTERCARD • DISCOVER

CIRCLE 488 ON READER SERVICE CARD

ONTRACK DATA RECOVERY

The World Leader
in Professional
Data Recovery Services!

- Mac Specialists
- Any Media
- All Operating Systems
- Emergency Services



Mention this
ad for a FREE
diagnostic
evaluation!

Ontrack DATA RECOVERY

1-800-872-2599

West Coast Federal Customers

1-800-752-7557 • 1-800-650-2410

CIRCLE 459 ON READER SERVICE CARD

print only what you need PC/MAC files go directly to the digital press!

DIGITAL
OFFSET
COLOR™

Short-Run 4-Color Offset Printing Brochures, Press Kits, Product Literature, Business Cards, Newsletters, Phone Cards...
 • FTP or modem your files
 • 24-48 hour on-demand service
 • Expert Customer Support Team
 Call for info/samples/quotes/now!

IMAGERS®

Overnight Services
 800-672-7032 or 404-351-5800
 1575 Northside Dr. Suite 490 Atlanta 30318
www.imagers.com

CIRCLE 456 ON READER SERVICE CARD

SCANNING SERVICES

Kodak PHOTO CD SERVICE PROVIDER
 Pro/\$8 • 35mm Master/\$.90
IMAGERS®
 Overnight Digital Services
 800-672-7032 or 404-351-5800
 1575 Northside Dr. Suite 490 Atlanta 30318
www.imagers.com

CIRCLE 502 ON READER SERVICE CARD

Special table setup for your Mac

Lots of cabinet choices for fitting all your hardware (printers, towers, small CPUs, external drives). Keeps cables and power strips concealed. Adjustable table surfaces for right or left handed use. Call today for a free catalog.

ScanCo

1-800-722-6263 or 1-206-481-5434

Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.
- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

415-495-5558 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
 381 Clementina Street • San Francisco, California 94103

CIRCLE 427 ON READER SERVICE CARD



LAZARUS
 DATA RECOVERY

Working at the speed of business.

800-341-DATA

MAC REPAIR

Mac Shop Northwest

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards *
- Lifetime Repair Warranty*

Tel: 1-503-642-3456
 *on many repairs. Visa/MC/Ax. Fast overnight shipping available. We use genuine Apple™ parts.



1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

SAFEWARE

Insures Your Computer



The Computerowners™ Policy insures you against theft, fire, accidental damage, lightning even power surge! Replace or repair for \$49 a year. Available in the U.S. & Ontario.

1-800-800-1492

SAFEWARE, The Insurance Agency Inc.
 2929 N. High St., PO Box 02211
 Columbus, OH 43202

CIRCLE 426 ON READER SERVICE CARD

LS FORTRAN

- ANSI standard FORTRAN 77
- VAX & Cray extensions
- Extensive code optimizations
- Background execution
- User-friendly Mac interface
- Native PowerMac & 68K

800-252-6479

Fortner Research LLC
 (703) 478-0181 • Fax: (703) 689-9593
Info@fortner.com
[Web: http://www.langsys.com/langsys](http://www.langsys.com/langsys)

CIRCLE 441 ON READER SERVICE CARD

Digital Output Have You Called Us?

Slides, Overheads, Canon Digital Lasers, 4x5 Imaging, Big Color Posters, Dye-Sub Color Prints...

IMAGERS®
 800-672-7032 or 404-351-5800
 1575 Northside Dr. Suite 490 Atlanta 30318
www.imagers.com

CIRCLE 500 ON READER SERVICE CARD

"I always look at the entire Macworld Shopper section to see what is available. I also like to check the prices of all the different products."

—Owner,

Computer Consultants

Source: Harvey Communication Measurement Report, January 1995



"I bought a Personal LaserWriter from Shreve Systems, a Macworld Shopper advertiser, and got a great deal and an excellent product. They're better than local computer stores!"

—Technical writer,
 Shopping Center Developers

*Source: Harvey Communication Measurement Report, January 1995



Never again worry about computer theft or damage

What could be better than full replacement?

By now, you've probably heard or read about SAFEWARE® Insurance for microcomputers. But you may still wonder just what it protects, or whether it's really worth the investment. If you've never lost any part of your computer system or software, you probably don't yet realize the limitations of most standard insurance coverages.

What do you mean it's not covered?

Operating your computer system without SAFEWARE protection is fine as long as you don't have to worry about an accident or loss. But what if you came to your office one morning to find you'd been robbed? Or your home had been ransacked? Or that a pipe had burst and caused water damage? Or that your system had fallen victim to a leading destroyer of computers—a power surge? All events beyond your control. If something like this should happen to you, you're likely to find out the hard way how limited your standard insurance policy's protection really is. No matter how little or how much you have invested in your computer system, discovering that it's not covered can be an expensive lesson.

What's the right coverage?

SAFEWARE's COMPUTEROWNERS™ Policy is a simple, easy-to-understand coverage you can count on. The policy offers full repair or replacement of hardware, media and purchased software, after a low \$50 deductible.

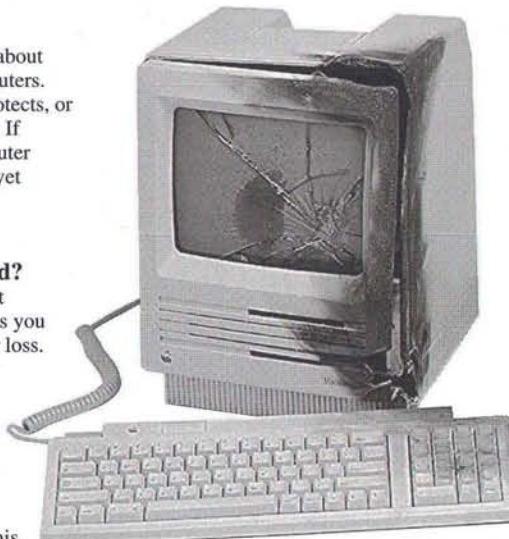
With your COMPUTEROWNERS Policy there's no need for you to schedule equipment or software as you do with "rider" policies. This will be especially important to you if you're ever planning to buy additional equipment or software, even just one peripheral.

No risk offer!

Your COMPUTEROWNERS Policy is a comprehensive plan of insurance, which means that it covers hardware, purchased software and media. Your complete system is protected against theft, fire and accidental damage. Your SAFEWARE Policy even covers damage caused by power surges...the leading destroyer of microcomputers.

The COMPUTEROWNERS Policy does not cover theft from an unattended vehicle, earthquake or computers outside of the U.S. and Canada. Call for these coverages.

Now, the COMPUTEROWNERS Policy is available on a no risk basis. If you are not completely satisfied with your coverage, you may return the policy for a full refund within 10 days of receiving it.



Press Reports

COMPUSERVE MAGAZINE . . . "If you use your computer for business, chances are your homeowners' policy won't cover it. Instead, you need to purchase special insurance. If you're self-employed, the premiums are tax-deductible."

THE WASHINGTON POST . . . "According to industry analysts, thefts of personal computers have risen by 400 percent since 1991."

Tens of thousands have said "yes!"

Since it was first introduced in 1982, tens of thousands of computer owners have said "yes" to SAFEWARE. Owners of systems, from the smallest portable to larger sophisticated business systems, are finding that SAFEWARE offers the most affordable and complete protection. SAFEWARE coverage offers the simplest peace of mind available to ensure carefree computing.

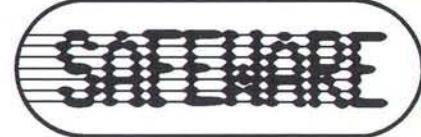
Easy to order!

Choose from two simple ways to pay for your COMPUTEROWNERS Policy: Call the toll-free phone number listed and we'll charge the premium to your VISA, MasterCard or American Express. You can also mail the coupon along with your check or credit card payment.

Total Hardware, Media & Software System Value	Annual Premium
Up to \$2,000	\$49
2,001 - 5,000	69
5,001 - 8,000	89
8,001 - 11,000	109
11,001 - 14,000	129

Call toll-free for rates on higher coverage

It is an underwriting requirement that you insure all your computer equipment for full replacement cost.



SAFEWARE, The Insurance Agency Inc.
2929 N. High St.
P.O. Box 02211
Columbus, Ohio 43202

1-800-SAFEWARE

NOW AVAILABLE IN CANADA!

With your COMPUTEROWNERS policy you get...

- Full repair or replacement coverage.
- Freedom from worries of fire, theft or accidental damage.
- Ultimate in power surge protection.
- Costs as low as \$49 per year.

ACTIVATE A SAFEWARE COMPUTEROWNERS POLICY NOW!

Complete, sign and return with your credit card or check payment. Or, for faster service, call

1-800-800-1492

On CompuServe: GO SAF

YES! MY COMPUTER NEEDS IMMEDIATE COVERAGE.

I understand I have 10 days from receipt of my policy to review terms and conditions. If not satisfied, I can return for a full refund.

Please Print Clearly

Name _____

Address _____

City _____

State/Zip _____

Total System Value \$ _____

Enclosed is my payment for one year

Check enclosed
 MC VISA American Express

Card # _____

Expiration Date _____

Signature _____

Daytime phone _____

This ad is a general summary of the provisions and qualifications of the insurance benefits included in the policy. Review your policy for full details. Call for coverage in TX, MI and NY. Void where prohibited. MW-2/96.

Mail to:
SAFEWARE, The Insurance Agency Inc.
2929 North High St.
P.O. Box 02211
Columbus, Ohio 43202

Underwritten by
AMERICAN BANKERS INSURANCE COMPANY
11222 Quail Roost Drive, Miami, FL 33157

Macworld DIRECTORY

ACCOUNTING SOFTWARE

COMPLETE BUSINESS SOLUTIONS

One-stop shop for hardware, software, financing and services for any size business. Our accounting programs range from basic to sophisticated multi-user systems plus Point of Sale, Inventory, Invoicing and Payroll packages. Call for a catalog or e-mail us at info@maxworld.com.

MAX COMPUTERS • (800) 656-6299

1506 25th Street, San Francisco, CA 94107
http://www.maxworld.com • Fax (415) 695-0257

CIRCLE 565 ON READER SERVICE CARD

BIBLIOGRAPHIC SOFTWARE

Bookends Pro ver. 3.2 delivers!

Manage your references, citations, notes. Attach any file to your reference database. Display pictures, QuickTime movies. Sort, validate Editor, Journal, Author, Keyword lists. Import from online, CD-ROMs. Sophisticated Find and Search, User defined imports. Format Bank. \$99 special. 1-800-325-1862.

WESTING SOFTWARE, INC.

email westing3@aol.com • http://www.westingcom/westing
134 Redwood Ave. Corte Madera, CA 94925 • Fax 415-945-3877

CIRCLE 566 ON READER SERVICE CARD

CD-ROM ARCHIVE

Archive Business Kit: CD-ROM

Make \$300+ per day with putting data onto CD-ROM. This kit shows you how to start an archive business and includes an actual business database with ready to use forms, letterhead, fax, checklist, etc. Complete with CD-ROM (Mac or PC), 3-ring binder with info: \$160.00

GLOBAL CD

P.O. Box 5617, Madison WI 53705
500-447-DISC • 608-238-6001 • Fax: 608-238-6081

CIRCLE 567 ON READER SERVICE CARD

COMPUTER INSURANCE

"INSURANCE TO GO" (sm)

Insurance for your Power book that's on the go and your stay at home desktop computer. Covers against theft, fire, accidents, power surge, natural disasters including earthquake. Bonus free software coverage. Premiums start \$60 p/yr low deductible. Call 1-800-722-0385 for details.

THE COMPUTER INSURANCE AGENCY, INC.®

6150 Old Millersport Rd. NE, Pleasantville, OH 43148
1-800-722-0385

CIRCLE 568 ON READER SERVICE CARD

COMPUTER INSURANCE

INSURES YOUR MAC

The Computerowners™ insurance policy repairs or replaces hardware, media and purchased software. \$49 a year covers up to \$2,000 of equipment against theft, fire, accidents, power surge, natural disasters and more! \$50 deductible. Call for immediate coverage or information. 1-800-800-1492.

SAFEWARE, The Insurance Agency, Inc.

2929 N. High St., P.O. Box 02211
Columbus, Ohio 43202

CIRCLE 569 ON READER SERVICE CARD

HOT NEW DIRECTORY!

Make sure you're part of the resource directory that reaches further than any other directory, delivering 625,000 targeted active buyers! All this at a very low cost!

FOR MORE INFORMATION please call

Bethany Baller at 415-978-3276,
or email to bethany_baller@macworld.com

DIGITAL IMAGING & PHOTOGRAPHY

QuickTake & Digital Camera Accessories

- CloseFlash: Even lighting as close as 2" (QuickTake, DC40).
- CloseTake: Photos from 2" to 4" (QuickTake).
- QuickPan: QuickTime VR Pan Head (QuickTake, 35mm, DC 40).
- WideTake: Doubles the camera's field of view (QuickTake).

KAI DAN

218 Anvil Dr. #110 Feasterville, PA 19053, Tel 215-364-1778
Fax 215-322-4186 info@kaidan.com http://www.kaidan.com

CIRCLE 570 ON READER SERVICE CARD

MEDICAL SOFTWARE

ELECTRONIC MEDICAL RECORDS

You ARE ready for a computerized medical chart. Care4th® Pro will revolutionize your practice. Doctor designed, astoundingly powerful, yet it feels like a chart. Hundreds of doctors in 46 states already know this. Under \$2800, Mac/PowerMac.

MED4TH SYSTEMS, LTD.

1165 W. Green Tree Rd., Milwaukee, WI 53217
(414) 351-1988 / (414) 351-1954 Fax

DRIVE SALES & REPAIRS

FLOPPY DRIVE REPAIR & SALES

Mac 3.5" 400k, 800k, & 1.44 MEG \$40.00
Advanced Exchange \$50.00 to \$85.00
New & Refurbished Drives CALL
Price includes most parts, cleaning & alignment. 1yr warranty on repair, 2yrs on new drives. Schools + Gov't. PO's accepted.

UPTIME COMPUTER SUPPORT SERVICES

http://www.scvnet.com/~uptime
Valencia, California 805-254-3384 Fax 805-254-1950

CIRCLE 571 ON READER SERVICE CARD

ENGINEERING SOFTWARE

Parking Structure Evaluation

Building owners, property managers, real estate agents and engineers "do it yourself" parking structure evaluation and repair cost estimation. Save 1,000's of dollars in engineering consulting fees. Novice & Expert users. 20 day MBG. \$295+10s/h, Demo \$25+s/h (Visa/MC).

MAN-ENG CONSULTANTS

1-800-263-3346 PACIFIC TIME
3:00 pm to 9:00 pm, 7 Days a Week

CIRCLE 572 ON READER SERVICE CARD

GENEALOGY SOFTWARE

Family Heritage File™ 4.0

Most powerful and easy genealogy program. Rated "BEST" by Macworld. Designed by genealogy professionals • Graphic Pedigree, Descendants, Families, Individuals, Marriages, Surnames • Unlimited Info/Individual • Export • Gedcom • Jewish/LDS features. \$149 + \$5 s/h. Demo \$7. Free Lit. Pak.

STAR-COM MICROSYSTEMS

Order Direct • Visa/MC OK • 801-225-1480
Windsor Park E., 25 W. 1480 N., Orem, UT 84057

CIRCLE 573 ON READER SERVICE CARD

MANUFACTURING SOFTWARE

The Qube Controller™

Complete GUI-based system runs x-platform on Macintosh® & Windows™. Includes Inventory, Multi-Level BOMs, MRP II, CRP, Job Cost, Lot, Batch & Serial #s, and much more! Complete accounting modules or interfaces w/ Great Plains®.

QUBE CONNECTIONS, INC.

One Fayette Park, Syracuse, NY 13202-2148
Tel (315) 476-2075 • Fax 476-3138 • qcisales@aol.com

CIRCLE 574 ON READER SERVICE CARD

MEMORY

Memory Batteries Fax/Modems

We offer RAM memory upgrades, batteries, AC adapters, Auto Adapters, Chargers & fax/modems for over 3,500 brands and models of MAC's, PC's, laser printers, workstations, etc. Lifetime Warranty on RAM and fax/modems, 1-Year on batteries. Low prices & immediate availability. Hard drives also available.

CONTROL MEMORY FACTORY

1-800-952-7867 • 408-437-1122 • Fax: (408) 437-1278

CIRCLE 575 ON READER SERVICE CARD

POWERBOOK BATTERIES

YOUR BEST BATTERY SOURCE!

From PB 100 to 5300 (and all the rest), Erudite has what you need to stay mobile...at prices that won't slow you down. We feature products from BTI, Lind & Absolute - all backed by warranty & 30-day MBG. Call, fax or e-mail for your best, lowest price! Visa/MC/American Express accepted.

ERUDITE PRODUCTS CORP.

409 Grand Ave., Englewood, NJ 07631
800-310-8505 Fax 201-871-8301 EruProCorp@aol.com

CIRCLE 576 ON READER SERVICE CARD

PROFESSIONAL TRAINING

Rent MacAcademy Videos by Mail

Videos are the easy way to learn! All major Mac programs available: over 100 different titles, each approximately 2 hours long. A two week rental including S&H, costs about a dollar a day. Return postage is prepaid. Ask about renting CD-ROMs by mail. Get our free catalog.

CAREERTAPES® ENTERPRISES

PO Box 309, Center Harbor, NH 03226-0309
(603) 253-7470 • LindseyA@aol.com

CIRCLE 577 ON READER SERVICE CARD

PUBLICATIONS

Software Developer & Publisher

Each issue contains insight and practical advice from leading writers & innovators in the software industry. Your way to reach the owners, managers, and decision-makers at the companies which develop and publish software.
http://www.infowebcom.com.

WEBCOM COMMUNICATIONS

10555 E Dartmouth #330, Aurora, CO 80017
800-803-9488 or 303-745-5711

CIRCLE 578 ON READER SERVICE CARD

NET PRICING:

Per Issue

12 issues	\$495
6 issues	\$515
3 issues	\$525
1 issue	\$550

TERMS:

Pre-payment only. Visa and Mastercard accepted.

SPECIFICATIONS:

1. Macworld Directory ads are text only ads. Logos or artwork are not accepted for this section.

2. Copy is accepted in digital format only. Copy may be sent on disk (ASCII or TEXT format) or via e-mail to bethany_baller@macworld.com. Macworld does not accept handwritten copy nor camera ready art work.

3. Ad sizes are as follows:

Headline: 1 line, initial caps of 33 characters maximum OR all caps of 28 characters maximum.

Body Copy: 5 lines, 275 characters maximum.

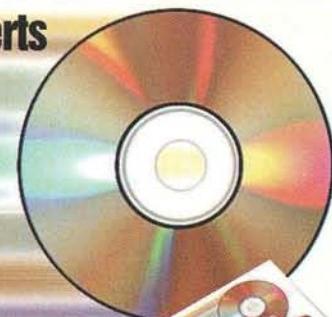
Company Name: 1 line, initial caps of 37 characters maximum OR all caps of 32 characters maximum.

Address and tel. number: 2 lines, 47 characters per line maximum.

EDUCORP® Multimedia — Your CD-ROM Experts

CD SOFT SOURCE

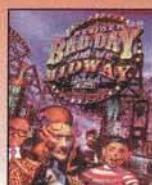
Over 1,600 titles in stock



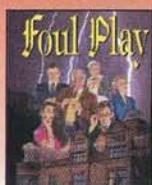
Games/Adventures



DOOM II
#U51308, \$42.95



Bad Day on the Midway
#51474, \$43.95



Foul Play
#51442, \$39.95

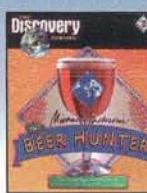
- Action
- Arcade
- Casino
- Flight
- Graphic Adventure
- Multipacks
- Mysteries
- Puzzle
- Shooting
- Space
- Sports
- Strategy
- Thinking

Part #	CD-ROM Title	Price
U51150	Buried in Time.....	\$42.95
51518	Congo: Descent into Zinj	39.95
51119	Dark Forces.....	49.95
51064	Descent	49.95
50316	Midnight Stranger → Adults only	49.95
50107	Myst.....	47.95

Entertainment/General



Home Improvement 1,2,3
#51329, \$39.95



The Beer Hunter
#51172, \$37.95

- Art
- Astrology
- Cooking
- Gardening
- Home Improvement
- Hobbies/Games
- Internet/BBS
- Literature
- Movies/T.V./Magazines
- Music
- Religion
- Screen Savers
- Shareware
- Sports & Fitness
- Travel

Part #	CD-ROM Title	Price
50661	4 Paws of Crab.....	\$29.95
2095	A Hard Days Night	27.95
50294	Xplora 1: Peter Gabriel.....	39.95
50642	Cosmology of Kyoto.....	67.95
50340	Marilyn & André →	39.95
51264	Star Trek Omnipedia.....	49.95

Desktop Publishing



- Applications
- Backgrounds
- Clip Art
- Fonts
- Logos
- Stock Photos
- Textures
- Tutorials

Part #	CD-ROM Title	Price
2067	1,000's of Fonts →	\$19.95
51131	Cartoon Art →	29.95
51490	Corel Gallery 1	39.95
51700	Creative Bundle 3-CD set.....	34.95
	Includes Cardshop Plus, StickerShop Plus and Calendars and More.	
50442	Earth & Space Photos →	19.95
MB1	Medical Library Bundle 2CD →	99.95
	2 KODAK Photo CDs including Medical Library v.1 (People) and Medical Library v.2 (Procedures)	
1444	Professional Photo Collection →	29.95

Place your order 24 hours a day, 7 days a week. **1-800-843-9497**

Orders: 1-800-843-9497 • Info: 619-536-9999 • FAX: 619-536-2345 • Internet: service@educorp.com • 7434 Trade St • San Diego, CA 92121 • Prices subject to change without notice.



Free shipping on CD-ROM titles with the → next to it.

Circle 157 on reader service card

FREE!

Call now for your free color catalog!
Order \$50 or more and get *100 Hot Games* (#MM9-1) CD-ROM free!
Act now, this is a limited time offer.

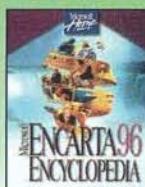
1-800-843-9497



Education/Reference



- Applications
- Business/Career
- Dictionaries
- Encyclopedias
- Fine Arts
- History
- Language
- Literature
- Maps/Atlases
- Math
- Medical
- Phone Directories
- Science
- Testing
- Tutorials
- Utilities



Encarta '96
#51649, \$49.95



Passage to Vietnam
#51164, \$39.95

Part #	CD-ROM Title	Price
50841	3-D Atlas	\$49.95
50624	A.D.A.M. The Inside Story	39.95
51710	Cinemania 96	32.95
51066	D-Day & FREE Normandy →	39.95
51537	Learn to Speak Spanish	99.95
50863	The Way Things Work	39.95

Kids Edutainment



- Creativity
- Early Learning
- History/Geography
- Language
- Math
- Reading
- Reference
- Science & Nature
- Problem Solving

Part #	CD-ROM Title	Price
50836	Amazon Trail	\$42.95
51360	Dr. Seuss ABCs	39.95
50618	How Things Work	37.95
1850	Just Grandma & Me	39.95
51129	Kids on Site	19.95
50739	Kid Pix Studio	44.95
51268	Magic School Bus: Human Body	44.95
50461	Math Blaster: In Search of Spot	38.95
50955	My First Amazing Dictionary	28.95
50880	Reader Rabbit 2	44.95

Multimedia Tools



- Animation
- Buttons
- MPEG

Part #	CD-ROM Title	Price
51375	HTML TemplateMaster	\$24.95
1450	Instant Buttons & Controls	149.95
50885	Missy Hamilton's Textures →	59.95
50471	Music Tracks	19.95
1582	SoundFX →	29.95

Viewpoint

by Steven Levy

One-Mississippi, Two-Mississippi . . .

WHY DO MACS TAKE SO LONG TO GET STARTED?

ONE OF THE SACRED precepts of personal computerdom is that over a period of years, or sometimes even months, machines get cheaper, more powerful, and best of all, faster. When journalists, technologists, or flacks want to illustrate how impressive this is, they usually revert to some variation of the following analogy: "If cars followed the same price/performance curve as computers, the Rolls-Royce that cost \$100,000 in 1970 would now cost 80 cents, would get 1000 miles to the gallon, and would travel at six times the speed of sound." The mind reels—what if you were tailgated by that guy? No one would blame you for dismissing this whole business as some high-tech fairy tale. Yet there's proof that Moore's Law—the equation that says every 18 months chips get twice as powerful and cost half as much—truly delivers better computers at lower prices, year after year. The same \$2500 that bought the original Macintosh in 1984 (with 128K of RAM and the Motorola 68000 processor) now buys a color Performa (with 8MB of RAM, a heavy-duty 601 RISC chip, and a quad-speed CD-ROM drive).

I've had a lot of time to think about this lately, because I've been testing a fresh-out-of-the-factory PowerBook 5300c. Apparently, some of these units—mine included—had some sort of gremelin in the system software that made for some strange behavior. The first sign of trouble came at start-up. After depressing the power button, I and others similarly afflicted experienced a more-than-generous interval before the machine was ready for work. How much time? Over five minutes, now that you ask. This was ample time to contemplate not only issues in technology, but diverse subjects like the national budget, the odd yet welcome Jane Austen revival, and the simmering

debate as to whether the new millennium will truly begin on the first day of the year 2000 or as some literal-minded types insist, on the same day a year thereafter.

Now, I am informed by an Apple spokesperson that this long start-up process is not normal; something was awry. And indeed, sometime after I returned the unit, Apple announced a fix that presumably cut the launch time. Still, just last summer I tested out a Power Mac 9500, the mightiest unit Apple has offered to date, and though I never took a stopwatch to it, my nonscientific verbal countdown (one-Mississippi, two-Mississippi . . .) went well past the two-minute mark between turn-on and turned on. And the Macintosh I use most, my trusty Power-

folders finally appeared on screen and you were finally ready for work. Apologists looked on the bright side, suggesting that this break was a perfect time to fix yourself a cup of coffee. We pioneers understood: the Mac was hardworking but underpowered.

And now, 12 years later, with a Mac several hundred times more powerful, on starting up the machine we still have time to brew coffee. The faulty PowerBook even gave me time to grow coffee beans. So much for the Rolls-Royce that out-speeds the space shuttle.

The designers of today's computers, particularly the geniuses at Apple's R&D division at One Infinite Loop, are great at making machines more powerful, but severely lacking in clues as to how to make that power work for us. (Incidentally, this problem is no longer unique to Macintoshes—start-up on a Windows 95 machine also allows ample time to watch paint dry.) I'm sure there are solid technical explanations for the long boot-up period—after all, the software is much more complicated than it was in 1984, and the Mac performs so many more tasks. And this problem does not necessarily extend to everything: many tasks—opening files, for instance—do take much less time than in those early days. Maybe that's why it's so infuriating to confront the mini-eternity of waiting when you start the Mac.

So if any of you designer types are reading this, let me slip you some advice: we don't want computers that *can* go faster—we want computers that *do* go faster. From the very start. As any runner will tell you, the most important part of the race happens at the starting gate. ■

Book 180, routinely takes over a minute.

To a Macintosh veteran like myself, this has a profound and disturbing significance. I remember the criticism leveled at the original Macintosh on its introduction 12 years ago. Not the least of its perceived flaws was a lackadaisical quality that manifested most glaringly on start-up. Unlike the other computers of the time—the IBM PC and the Mac's older cousin, the Apple II+—the Macintosh did not spring to attention immediately, but engaged in what seemed an interminable conversation between the internal and external floppy disk drives before the



**YOU PROBABLY NOTICED THE CIRCLE
ON THE RIGHT IS .00437" LARGER.**



For the truly demanding, we present the NEC MultiSync XP21 monitor. A creation so precise it satisfies even the discerning eyes of graphic artists, designers, architects and the like.



The MultiSync® XP21™ Monitor With Image Manager™ Software.

The precision starts with the remarkable control provided by our Image Manager software. It's an intuitive interface, similar to software you're already familiar with, that lets you use your keyboard and mouse to adjust the size and position of

MULTISYNC® XP21™
21" Flat Square Technology CRT
(19.8" viewable image size)
Max. Res.: 1152 x 870
(Mac Dual Page Mode)
OptiClear™ Surface
On-Screen Manager
Sun® Workstation Compatible
3-yr. limited warranty
Optional ColorProof System calibrator

brighter, sharper, high-resolution pictures. And its dual dynamic beam focus virtually eliminates distortion all the way out to the edges and corners. We even have GlobalSync™ technology that counteracts the effects of the earth's magnetic field on screen geometry and color purity. This may all seem a bit indulgent to most. But it makes the MultiSync XP21 perfect for graphic design, color pre-press, CAD/CAM, document imaging and other high performance uses. If your computing falls more into areas of page layout or sophisticated business applications, check out the MultiSync XE21™.

images. You can also access up to 11 different screen geometry adjustments, five different industry standard color settings, plus up to five personal color settings.* Then, once your standard settings are established, you can download them to all your XP monitors. Of course, all this control saves service and support time. Which,

when you think about it, is really a form of control in itself.

And you can rest assured your images will be displayed with consistent accuracy. The MultiSync XP21 monitor delivers

So find out more about the monitor that – dare we say? – runs circles around the competition. The MultiSync

XP21. Just call 1-800-NEC-INFO. To get information sent via fax, call 1-800-366-0476

SEE, HEAR

and request catalog #1. Or contact us on the Internet at

AND FEEL THE

DIFFERENCE™

NEC

*Requires ACCESS.bus capable computer or ACCESS.bus adapter available separately from NEC by calling 1-800-820-1230. MultiSync is a registered trademark and OptiClear, Image Manager, GlobalSync, XP21, XE21 and See, I Hear and Feel the Difference are trademarks of NEC Technologies, Inc. All other trademarks are the property of their respective owners.

GSA# GS00K94AGS5241PS01. ©1995 NEC Technologies, Inc.

Key #26444.

**YOU'RE A PERFECT CANDIDATE
FOR OUR MONITOR.**



Janet and her favorite pop-up menu.

When Janet's clients want a design changed, they want it changed yesterday.

Good thing Janet has Turbo Mouse® 5.0, the all-new high-performance trackball from Kensington.

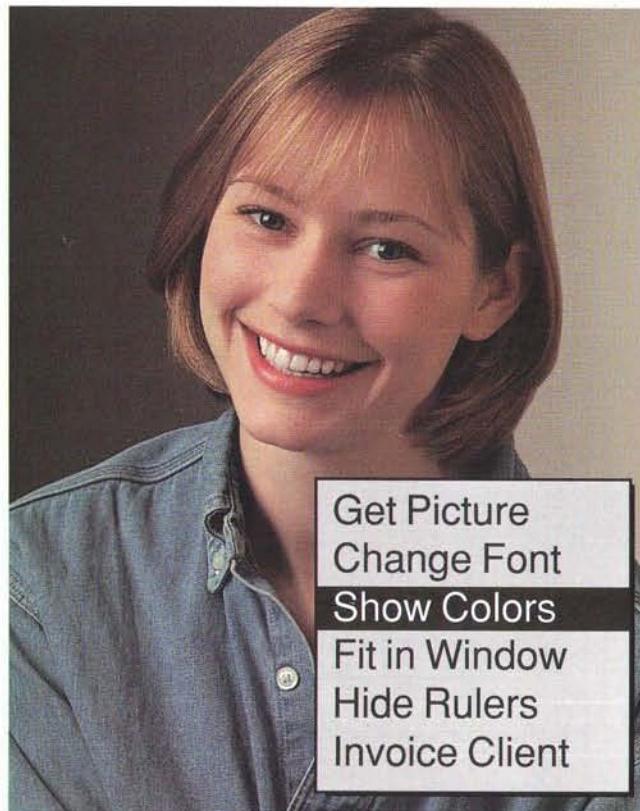
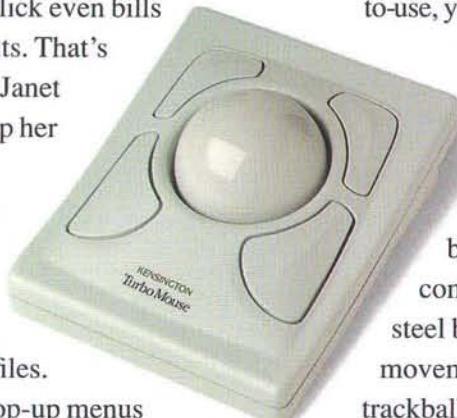
Turbo Mouse is no ordinary mouse. Its unique four-button design and intelligent software let Janet execute multi-step commands with a single click.

And she saves even more time by organizing the commands in a convenient and personalized pop-up menu.

One click brings up the menu. Another click executes a command, like changing the colors or fonts.

One click even bills her clients. That's because Janet has set up her pop-up menu to access her clients' invoice files.

But pop-up menus



Get Picture
Change Font
Show Colors
Fit in Window
Hide Rulers
Invoice Client

are not just for desktop publishing. You can use them for word processing, spreadsheets, just about anything.

Easy-to-program, easy-to-use, your favorite programs will run better. You'll work faster. You'll save valuable time.

Turbo Mouse 5.0 features a new four-button design, a large, comfortable ball, and stainless steel bearings for ultrasMOOTH movement. And because it's a trackball, you also save desk space.

Kensington Mouse, our new two-button conventional mouse, features a tapered shape, a symmetrical design and inclined sides for more comfort and control.

Acclaimed by users and critics alike, Kensington mice have won more awards than any other input device. And they all come with the unique Kensington Satisfaction Guarantee,

which includes a 5-year warranty, toll-free support and a no-risk 90-day trial.

Compatible with System 7.5 and Power Macintosh.

For more information,

please call 800-535-4242.



KENSINGTON®

Turbo Mouse 5.0
Kensington Mouse



MW ★★★

Turbo Mouse and Kensington are registered trademarks of Kensington Microware Limited. All other trademarks are the sole property of their respective owners. © 1995 Kensington Microware Limited 12/95

Circle 1 on reader service card